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Elko Field Office

April 1997



ENVIRONMENTAL ASSESSMENT
BLM/EK/PL-97/008

NEWMONT GOLD COMPANY

**WOODRUFF CREEK EXPLORATION
PROJECT**

This document is the environmental assessment prepared by the Bureau of Land Management, Elko Field Office, for the proposed Woodruff Creek Exploration Project. This document is being made available to the public in accordance with the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). It is my decision to approve the Newmont Gold Company's Woodruff Creek Exploration Project as recorded in the proposed route of BLM EK/PL-97/008.

After consulting the proposed action, Newmont Gold Company will place a protective barrier around cultural sites C100V-1-8100, C100V-1-8154, C100V-1-8164, C100V-1-8166, C100V-1-8170, and C100V-1-8171. It is my intent to ensure that a high barrier is present between the cultural sites and the surrounding exploration area in order to protect the cultural resources from damage.

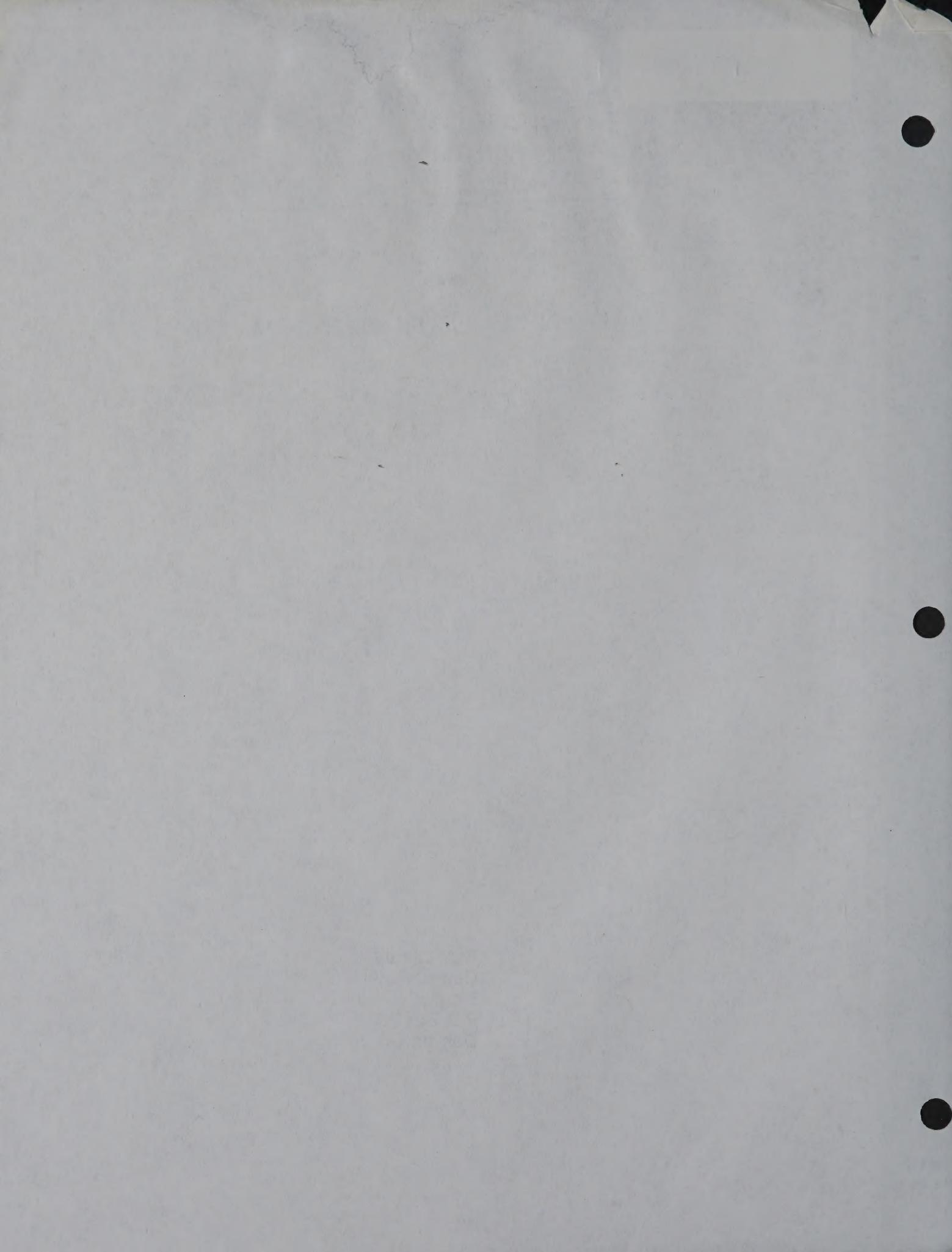
Placing a protective barrier a minimum of 30 meters from the perimeter of the cultural areas, where existing roads or through roads adjacent to the perimeter of the cultural areas, protective barriers will be placed along the roadway.

Barriers may consist of any materials or building codes which are reasonable and appropriate to the needs of the protection of the cultural resources.

Cultural resources and the perimeter of the proposed project area are located within a state signed area under the authority of the Archaeological Resources Protection Act of 1979 (16 U.S.C. §1701).

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FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD
NEWMONT GOLD COMPANY:
WOODRUFF CREEK EXPLORATION PROJECT
BLM/EK/PL-97/008
3809, N16-96-002P

Finding of No Significant Impact

Based on the analysis of potential environmental impacts contained in the Environmental Assessment BLM/EK/PL-97/008, I have determined that the action will not have a significant effect on the human environment, therefore, an environment impact statement will not be prepared.

Decision

It is my decision to authorize the Newmont Gold Company: Woodruff Creek Exploration Project as described in the proposed action of BLM/EK/PL-97/008.

Mitigation

Prior to initiating the proposed action, Newmont will:

- 1) Stake and/or sign an avoidance area around cultural sites CRNV-11-9093, CRNV-11-9094, CRNV-11-9098, CRNV-11-9099, CRNV-11-9110, and CRNV-11-9111 with steel posts to ensure that a visible barrier is present between the cultural site and the surrounding operations area in order to protect the cultural sites from damage.
- 2) Place avoidance barriers a minimum of 30 meters from the perimeter of the cultural site(s). Where existing roads run through and/or adjacent to the perimeter of the cultural site(s), avoidance barriers will be placed along the roadside.
- 3) Restrict any maintenance to existing roads within an avoidance area to the limits of the existing road berm.
- 4) Direct its personnel and the personnel of its contractors to avoid all staked and/or signed areas under penalty of Archaeological Resources Protection Act of 1979 (16 U.S.C. 470).

In the event an eligible or unevaluated cultural site is subsequently found to have been damaged by activities associated with the proposed action, Newmont will draft a data recovery plan for the affected site(s) within three months. After the data recovery plan has been accepted by the BLM and the State Historic Preservation Office (SHPO), Newmont will implement data recovery at the affected cultural site(s) within one year of the date of acceptance of the data recovery plan by the BLM and the SHPO.

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Monitoring

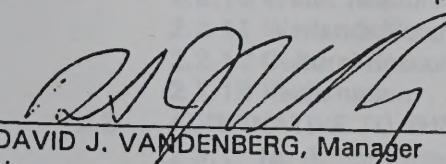
A BLM representative will make regular field inspections of the Woodruff Creek Exploration Project area. These inspections will be performed throughout construction, operation, and reclamation of the proposed action. All field compliance inspections will be documented into the project file at the BLM office in Elko, Nevada.

Rationale

As a result of the analysis in the Newmont Gold Company: Woodruff Creek Exploration Project Environmental Assessment, BLM/EK/PL-97/008, it was determined that the proposed action will not result in unnecessary or undue degradation to the public lands. The proposed action is in conformance with the Elko Resource Management Plan, Issue - Minerals, Management Prescription - 1.

The implementation of the proposed action will allow Newmont Gold Company to conduct exploration and development drilling within the boundary of the Woodruff Creek Exploration Project.

The General Mining Law of 1872 gives a claimant the right to explore, discover, and diligently develop the mineral deposits on a claimant's mining claims. The No Action alternative was not selected because it will not allow Newmont to further define and discover ore deposits on Newmont mining claims within the project area.


DAVID J. VANDENBERG, Manager
Nonrenewable Resources

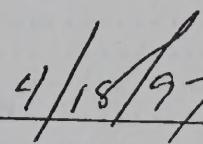

Date

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Newmont Gold Company
Woodruff Creek Exploration Project
Environmental Assessment BLM/EK/PL-97/008

1.0 INTRODUCTION/PURPOSE AND NEED

Newmont Gold Company (Newmont) proposes to conduct mineral exploration activities on public lands administered by the Bureau of Land Management (BLM), Elko Field Office and split estate lands (BLM - surface; Newmont-minerals). The proposed action, the Woodruff Creek Exploration Project, is described in the proposed Woodruff Creek Exploration Plan of Operations and Reclamation Permit Application dated May 1996. The proposed exploration activities would occur within a 6,490-acre project area, located approximately 9 miles south of Carlin, Nevada. The majority of the drilling would occur in specific concentrated drilling areas; other areas would undergo occasional drilling activities. The proposed project time frame would occur for approximately three years, 1997 through 1999. The Woodruff Creek Exploration Project is located northwest of the existing Rain Mine, operated by Newmont. Figure 1-1 presents the regional and general project location. Figure 1-2 presents the land status for the entire project area.

1.1 INTRODUCTION

The Woodruff Creek Exploration Project lies within Newmont's administrative area known as the South Operations Area of the Carlin Trend. The Carlin Trend is a 46-mile-long, northwest-trending, mineralized belt in northern Nevada that contains gold, silver, barite, and other minerals. Mining has taken place in the Carlin Trend over the past 100 years, with the majority of activity occurring from 1980 to the present. The Carlin Trend was first explored for mineral potential near Maggie Creek soon after the railroad was completed through the town of Carlin, Nevada in 1896. The first significant production of gold was from placer deposits near Lynn Creek in 1907. Gold production occurred sporadically from placer and quartz lode deposits at various locations in the Carlin Trend from 1920's through the present (BLM, 1993).

In the late 1950's, Carlin Gold Mining Company became interested in exploring the Carlin Trend for gold. Exploration efforts revealed that significant amounts of gold were located in the area as deposits of sub-microscopic, disseminated gold, discernible by assay methods, but not otherwise visible. Exploration has been on-going since 1959.

The Rain Mine is located approximately 10 miles southeast of Carlin, Nevada and approximately 2 miles southeast of the Woodruff Creek Exploration Project. Newmont developed the Rain Mine in 1987. The facilities within the Rain Mine include: two open pits, waste rock disposal facilities, heap leach pad and associated facilities, a mill process facility with an associated tailings impoundment, and an underground mine and associated facilities.

The proposed Woodruff Creek Project boundary is shown on Figure 2-1. The area within the project boundary includes approximately 6,490 acres, of which approximately 59 acres would be disturbed.

Disturbance from existing exploration activities, involves 6.07 acres conducted under Tess Notice (N16-92-044N), Tess NW Notice (N16-96-002N), and North Piñon-Petan Project, and associated amendments, all of which has been incorporated into this plan. (The North Piñon-Petan Project is on fee ground). These Notices and amendments were submitted between 1992 and 1996.

1.2 PURPOSE AND NEED

The purpose for the proposed Woodruff Creek Exploration Project is to define the nature and extent, shape, and economic value of precious metal-bearing deposits within the proposed project area. Proposed drilling operations are needed for the preparation of future mine development. The need for the proposed project arises from the international, national, and regional demands for gold.

1.3 ISSUES

An initial coordination meeting was held on September 4, 1996, between the Elko Field BLM and Newmont to determine the scope of the Woodruff Creek Exploration Project. On September 10, 1996, scoping letters were sent to the U.S. Fish and Wildlife Service, Nevada Division of Wildlife, and the Nevada Natural Heritage Program. On October 11, 1996, scoping letters were delivered to the Western Shoshone Historic Preservation Society and Felix Ike, Chairman of Te-Moak Tribal Council. A notice regarding the proposed Woodruff Creek Exploration Project requesting written comments was also published in the *Elko Daily Free Press* and several other newspapers, September 28, 1996. The project was included in the Elko Environmental Calendar in the December 1996 issue. Elko County, George Boucher, Elko County Manager, was notified by the BLM on March 24, 1997. The USFWS, NDOW, and the

NNHP are the only agencies to respond to the scoping letters. No additional public comments have been received to date.

The following issues and concerns were raised by agencies during the scoping process:

- Wildlife - impacts to mule deer migration, various raptors may occur throughout the proposed project area, and golden eagles are known to nest near or adjacent to the project area;
- Species of Concern - special status species may occur in the project area;
- Wetlands - potential impacts to wetlands; and,
- Vegetation - removal of vegetation during avian breeding season may result in destruction of bird nests and/or their contents.

1.4 LAND USE PLAN CONFORMANCE STATEMENT

The proposed action and alternative described below are in conformance with the Elko Resource Management Plan, Issue: Minerals, Management Prescription 1, and are consistent with Federal, State, and local laws, regulations, and plans to the maximum extent possible.

TABLE 2-1
PROPOSED ACTION DISTURBANCE AREAS

	Per Linear (feet)	Per Acre Land (acres)	Total Acres
Drill pads 150 feet by 80 feet disturbed areas	0.0	11.8	13.5
Gamplines 120' feet by 20 feet disturbed areas	0.0	4.0	8.0
Road 120' feet land disturbance widths	0.0	20.0	20.0
Total = 100 linear feet disturbed areas	0.0	77.8	81.5
TOTAL	0.0	259.8	261.0

The initial year would typically be construction of approximately 100 feet by 80 feet. Roads to remote trapping sites would typically be 30 feet by 70 feet.

The amount of disturbance areas would never encroach a total of 10,000 acres of land. This would be a rough estimate to the total annual usage for similar work activities.

2.0 PROPOSED ACTION AND ALTERNATIVE

2.1 INTRODUCTION

Newmont submitted the Woodruff Creek Exploration Project Plan of Operation and Reclamation Plan and Permit Application (N16-96-002P) to the BLM Elko Field Office in May 1996. This Plan of Operations proposed exploration activities within the Woodruff Creek Exploration Project area, encompassing 59 acres of disturbance from 1997 through 1999. The proposed exploration project would occur on public lands administered by the BLM and split estate lands (BLM, surface; Newmont, minerals). The applicant address is:

Newmont Gold Company
P.O. Box 669
Carlin, NV 89822-0669

2.2 PROPOSED ACTION

Newmont proposes to conduct exploration activities that include the construction of 120 drill holes. The following table describes the disturbance acres associated with the proposed project.

TABLE 2.1
PROPOSED ACTION DISTURBANCE ACRES

	Fee Lands (acres)	Public Lands (acres)	Total (acres)
Drill pads (50 feet by 85 feet disturbance)	0.0	11.5	11.5
Sumps (20 feet by 70 feet disturbance)	0.0	4.0	4.0
Road (25 feet total disturbance width)	0.0	26.0	26.0
Trenches (20 feet total disturbance width)	0.0	17.5	17.5
TOTAL	0.0	59.0	59.0

The drill pads would typically be constructed in dimensions of 50 feet by 85 feet. Sumps to contain drilling fluids would typically be 20 feet by 70 feet.

The project area in which activities would occur encompasses a total of 6,490 acres of public land. Newmont will submit to the BLM an annual report for previous years activities.

2.2.1 Drilling Methods

Newmont proposes to use reverse-circulation (RC) air rotary drilling rigs, mud conventional-circulation drill rigs, and core drill rigs. Each type of drill has its advantages and disadvantages, depending upon the nature of the material being drilled, the depth of the target, and the information sought. For any one drill hole, typically more than one type of drill rig would be used. For some deep holes, all three methods may be used sequentially to complete the hole.

Reverse Circulation

Reverse circulation drilling depths range from 100 to 2,000 feet; however, typically drilling occurs to depths of 900 feet. At shallow depths, dry air would be the working fluid and water would be injected only to suppress dust. Reverse circulation units usually consist of three large tandem axle carriers (rig, water truck, pipe truck) and a pickup truck to transport crews and supplies. Some drilling units provide a combination water truck/pipe truck so that only two large trucks are on site. All reverse circulation units would be truck-mounted.

Mud Rotary

Mud rotary drilling would be used primarily in deep alluvial-covered basins where the groundwater and/or unconsolidated formation makes drilling with air difficult. Mud rotary holes would not exceed 1,000 feet in depth. This type of drilling would utilize either water, bentonite, or polymers as drilling fluids. The quality of sample recovered would be less reliable than with reverse circulation drilling; however, the use of mud as a working fluid maintains better hole conditions, which would be of particular importance in drilling through thick alluvium or highly altered rock. Mud rotary units typically consist of three large tandem axle carriers (rig, water truck, pipe truck) and a pickup truck to transport crews and supplies.

Core Drilling

Core drilling would be typically used where conditions prevent the use of other types of drill rigs and where solid samples of rock are needed for geological, geotechnical, or metallurgical studies. Core holes would be approximately 500 feet to 1,500 feet. Lubrication for core drilling would be provided by a thin slurry of bentonite, water and various viscosity modifiers and dispersants. In general, less fluid would be discharged from core drills than from the other two types of drilling methods. Core drilling units normally consist of two or three single-axle trucks (rig, water truck, pipe truck/service truck) and a pickup truck to transport crews and supplies. Core rigs may be truck- or skid-mounted.

2.2.2 Trenches

In addition to exploration drilling activities, Newmont also proposes to construct exploration trenches. A maximum of 38,000 lineal feet of trenches, with an average disturbance width of 20 feet, are proposed to be constructed, which would result in 17.5 acres of disturbance.

2.2.3 Exploration Drill Roads

When drill sites can not be accessed via overland travel, exploration drill roads would be constructed. Approximately 45,000 linear feet of exploration drill roads are proposed to be constructed for 26 acres of disturbance.

Most new exploration roads would be constructed with a bulldozer using "cut only" methods. "Cut only" would be necessary for most roads as compacted level surfaces are essential for movement for the relatively top-heavy, truck-mounted drilling equipment.

Whenever possible, and primarily on reasonably level terrain, topsoil would be salvaged and stockpiled to the uphill margin of the road cut. On steeper slopes, topsoil would be stored as side cast along the periphery of the roads, pads, and sumps. Although this method would mix the limited existing thickness of topsoil with the subsoils, experience has shown that the resulting replaced soils can support vegetation. Newmont may elect to push topsoil uphill prior to cutting roads on steep slopes; however, this would result in increased surface disturbance due to bulldozers working "back-and-forth" below the proposed road.

Roads would be built to an average travel width of 10 to 12 feet (depending upon the terrain) for an average disturbance width of 25 feet. Roads cut on a side slope would typically be sloped in at a grade of one to two percent to promote proper drainage. Roads would be constructed at a grade of eight percent or less. Road maintenance and upgrading would be done to increase production and minimize adverse effects of erosion from heavy traffic and water runoff.

To facilitate exploration, the allotment fence may be crossed (see Figure 2-1). For temporary crossing of the fence, Newmont would cut the fence for access and then immediately restore the fence to its previous condition. For seasonal use access across the allotment fence, Newmont would install long-term heavy range cattle guard(s).

Exploration road upgrading and maintenance procedures would include:

- periodic dressing or blading of frequently used road surfaces with a motor patrol;
- installation of drainage controls such as water bars, ditches, and, if necessary, culverts, to control road damage, soil loss, and sedimentation impacts from erosion;
- road maintenance, such as snow removal and drainage of mudholes, to provide access during wet seasons;
- surfacing some road segments with gravel to control muddy conditions so that continued access along the defined route of travel can be assured; and,
- installation of weed-free straw bales for sediment control.

2.2.4 Ancillary Facilities

Existing buildings and facilities at the Rain Mine site would be used by Newmont to store exploration samples and equipment as necessary. No construction of new buildings is proposed.

2.2.5 Equipment

Equipment needed for construction and drilling activities would be used strictly on an as-needed basis. A bulldozer would be used for road and site construction. Drill rigs would be supported by water trucks, pipe trucks, and light vehicles as needed. Newmont could have a maximum of up to 10 drill rigs working in the project area. Newmont anticipates that the average number of drill rigs could range between three and six, depending on drill rig availability and need.

2.2.6 Operating Schedule

Exploration drilling activities would operate 24 hours per day, 365 days per year, depending on availability, need, and weather conditions.

2.2.7 Work Force

Newmont proposes to utilize a maximum of up to 10 drill rigs, with two contract employees per rig for a maximum work force of 25 contract employees. A maximum of 4 geologists and 8 support personnel, all currently employed by Newmont, would also be associated with this exploration project.

2.2.8 Air Quality

An *Air Quality Permit to Construct for Surface Disturbance* would be acquired from the Nevada Division of Environmental Protection (NDEP), Bureau of Air Quality. Newmont proposes to water constructed access and exploration roads, as necessary, to control dust.

2.2.9 Solid and Hazardous Materials

Solid Wastes

All project-related refuse would be disposed at an approved landfill. No refuse would be disposed on site.

Hazardous Materials

Newmont would comply with applicable Federal and State laws dealing with the use, storage, and disposal of chemicals, petroleum, and petroleum products. Hazardous wastes would not be generated in the project area. In the event regulated material such as diesel fuel are released, measures would be taken to control the extent of the release, and the appropriate agency, including the BLM, would be notified in accordance with the applicable Federal and State regulations.

2.2.10 Water Resources

All drill holes would be plugged according to Nevada Division of Water Resources and Nevada Administrative Code (NAC) 534.425 through 534.428. All drilling activities would avoid any springs and surface waters present within the project area. Sediment control structures would be constructed when necessary to control sediment run off, but would not be limited to, silt traps and fences, sediment ponds, and/or settling basins. Straw, hay bales, or synthetic geotextile fabrics would be used to construct silt traps and fences. Newmont would maintain these structures during exploration activities. Upon completion of exploration activities and successful reclamation, sediment control structures would be removed or reclaimed.

2.2.11 Wetlands/Riparian Zones

There are some riparian and wetland areas located near the springs. The springs are located on Figure 2-1. All exploration activities would avoid wetlands and riparian zones.

2.2.12 Cultural Resources

All exploration activities would avoid known eligible or potentially eligible cultural resource sites. Should cultural resources be uncovered during exploration activities, all operations in the

immediate vicinity would stop and the BLM Elko Field Office would be contacted for further direction.

2.2.13 Reclamation

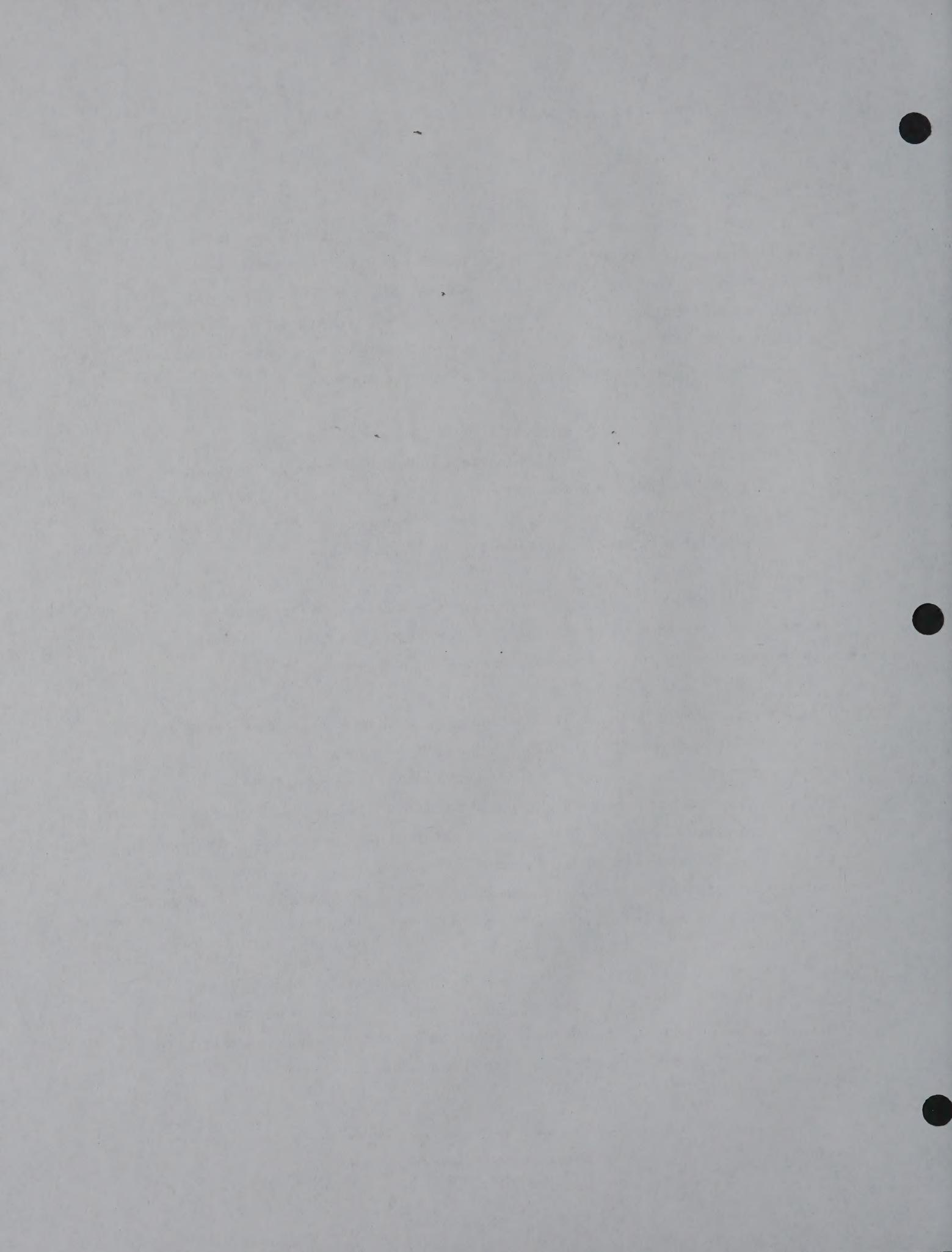
The Woodruff Creek Exploration Plan of Operations (Newmont, 1996) describe the detailed reclamation plan for this project. Reclamation for public lands would be consistent with the requirements of Nevada Revised Statute (NRS) and NAC 519A, 43 CFR 3809, and in accordance with the "Nevada Interim Standards for Successful Revegetation," (BLM Instruction Memorandum NV-94-026, 1994). Reasonable measures would be taken during operations to prevent unnecessary or undue degradation to the federal lands involved.

Newmont's long-term reclamation goal for the Woodruff Creek Exploration Project would be to create a safe, stable, and productive post-exploration land use of livestock grazing and wildlife habitat. This goal would be accomplished by utilizing the guidelines outlined in the Reclamation Plan, as submitted to the BLM in May 1996. Newmont assumes responsibility for reclaiming all existing disturbance in the Woodruff Creek Exploration Project area.

Proposed reclamation associated with the Woodruff Creek Exploration Project would consist of hole plugging, in accordance with State of Nevada regulations, (as discussed in previous sections), recontouring, selective replacement of topsoil, and seeding.

All access roads, drill pads, sumps, and trenches constructed by a dozer typically result in deposition of side cast material. The volume of side cast material can vary significantly, depending primarily upon topography. Roads which generate side cast material would be recontoured to an approximate pre-disturbance slope by pulling berms and side cast material back onto the road. Materials would be replaced with either backhoes or dozers, dependent upon site-specific consideration of slope, proximity of heavy equipment, and potential of creating unnecessary additional disturbances while recontouring. Recontoured surfaces would be re-established as near as possible to the surrounding, natural topography.

Roads, pads, and sumps which do not require replacement of side cast material would be scarified or ripped to a depth of approximately eight inches prior to revegetation efforts. Efforts would be taken to scarify only those portions of road which require seeding (e.g., tire tracks) while minimizing disturbance to established vegetation.



Recontouring and scarifying access roads, drill pads, sumps, and trenches would be the primary means by which seedbeds would be prepared. Leaving a roughened surface would provide opportunities for seed and moisture to be trapped and held. Additional benefits of a roughened surface include slower runoff, increased infiltration, and in general, more favorable microenvironments for seed germination.

The proposed reclamation plant list is presented in Table 2.2. Modification to the plant list and application rates would be developed through consultation with and approval by the BLM.

**TABLE 2.2
RECLAMATION PLANT LIST**

COMMON NAME	SCIENTIFIC NAME
Thickspike wheatgrass	<i>Agropyron dasystachyum</i>
Pubescent wheatgrass	<i>Agropyron trichophorum</i>
Streambank wheatgrass	<i>Agropyron riparium</i>
Bluebunch wheatgrass	<i>Agropyron spicatum</i>
Sandberg bluegrass	<i>Poa secunda</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Webber ricegrass	<i>Oryzopsis webberi</i>
Idaho fescue	<i>Festuca idahoensis</i>
Green needlegrass	<i>Stipa viridula</i>
Bottlebrush squirreltail	<i>Sitanion hystrix</i>
Great Basin wildrye	<i>Elymus cinereus</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Sheep fescue	<i>Festuca ovina</i>
Western wheatgrass	<i>Agropyron smithii</i>
Slender wheatgrass	<i>Agropyron trachycaulum</i>
Canby bluegrass	<i>Poa canbyi</i>
Sand dropseed	<i>Sporobolus cryptandrus</i>
Alkali sacaton	<i>Sporobolus albidus</i>
Northern sweetvetch	<i>Hedysarum boreale</i>
Buckwheat	<i>Eriogonum spp.</i>
Annual ryegrass	<i>Lolium perenne multiflorum</i>
Western yarrow	<i>Achillea millefolium lanulosa</i>
Small burnet	<i>Sanguisorba minor</i>

TABLE 2.2 (continued)
RECLAMATION PLANT LIST

COMMON NAME	SCIENTIFIC NAME
Lewis flax	<i>Linum lewisii</i>
Gooseberryleaf (scarlet) globemallow	<i>Sphaeralcea grossularifolia</i>
Scarlet globemallow	<i>Sphaeralcea coccinea</i>
Desert globemallow	<i>Sphaeralcea ambigua</i>
Arrowleaf balsamroot	<i>Balsamorhiza sagittata</i>
Palmer penstemon	<i>Penstemon palmeri</i>
Wyoming big sagebrush	<i>Artemisia tridentata wyomingensis</i>
Chokecherry ¹	<i>Prunus virginiana</i>
Black sagebrush	<i>Artemisia nova</i>
Shadscale	<i>Atriplex confertifolia</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Prostrate kochia	<i>Kochia prostrata</i>
Serviceberry ¹	<i>Amelanchier spp.</i>
Winterfat	<i>Ceratoides lanata</i>
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>
Green Mormon tea	<i>Ephedra viridis</i>
Silver buffaloberry ¹	<i>Shepherdia argentea</i>
Mountain brome	<i>Bromus marginatus</i>
Nuttall saltbrush	<i>Atriplex nuttallii</i>
Western virginssbower	<i>Clematis ligusticifolia</i>
Spiny hopsage	<i>Grayia spinosa</i>
Antelope bitterbrush ¹	<i>Purshia tridentata</i>
Snowbrush ¹	<i>Ceanothus spp.</i>
Currant ¹	<i>Ribes spp.</i>
Woods rose ¹	<i>Rosa woodsii</i>

¹ Shrubs may be planted from either seeds or seedlings
Source: BLM, 1996.

Application rates for the mixture would range between 10 to 15 pounds per acre. Plant species would be selected from the reclamation plant list based upon their price and availability. Seeding procedures would be dependent upon specific site characteristics. Recontoured roads, pads, sumps, and trenches with severe slopes would be seeded with hand-held broadcast seeders. An electric broadcast seeder mounted on an All-Terrain Vehicle (ATV)

would be used on roads with gentle slopes. A chain-drag mounted behind the ATV may be used to cover the seed.

In the event it becomes necessary to install drainage structures, Newmont would remove and reshape any fill material in drainages to reestablish preexisting seasonal water paths. Suitable material would be used to armor reshaped drainages, if necessary, to minimize erosion.

Following the completion of a specific exploration, each area would be reclaimed during the next available construction season, or as soon as practical. Reclamation of certain long-term access roads may be deferred until project completion. Access roads needed for future year's exploration would be left open on a year-to-year basis.

2.3 ALTERNATIVE TO THE PROPOSED ACTION

2.3.1 No Action Alternative

Under the No Action Alternative, Newmont's proposed Woodruff Creek Exploration Project would not be conducted. Newmont would not be able to further define and discover ore deposits on public lands. The Mining Law of 1872 grants the claim holder access and the right to explore their claims in a prudent and diligent manner.

Newmont has made further determinations that the following resources, although known to the company, are unaffected by the proposed project:

• Native American Religious Ceremonies with the Tule Lake Tribe Council, the Shasta, Wintu Indians, and Northern Shasta Council, and the Western Shoshone Native Reservation Board, were informed earlier

January 16-24, 1997. The consultation requested comments on the effects the project might have on religious, traditional, or cultural areas important to the Western Shoshone people. To date, one letter has been sent and two general oral comments made by each of the aforementioned Native Shoshone groups, indicating comment. This consultation has been completed thus far. The Shoshone Board Council indicated that they knew no comments or concerns on the proposed project.

3.0 AFFECTED ENVIRONMENT

The Woodruff Creek Exploration Project area is characterized by hills and small mountain ranges. The proposed project site is within the Piñon Range; elevations in the immediate area range from 5,800 to 7,420 feet above mean sea level (AMSL).

3.1 PROPOSED ACTION

The following critical elements of the human environment are not present or are not affected by the proposed action or alternative in this Environmental Assessment:

- Air Quality
- Areas of Critical Environmental Concern
- Environmental Justice
- Farmlands (Prime or Unique)
- Floodplains
- Paleontology: A Class III (30 meter transect interval) survey has been completed over the project area. This survey was completed to document any archaeological or paleontological resources within the project area, and then to assess the significance of these resources. No paleontological resources were discovered during the inventory. Should paleontological resources be uncovered during exploration activities, however, all operations in the immediate vicinity would stop and the Elko Field Office would be contacted for further direction.
- Wastes (Solid or Hazardous)
- Wetlands/Riparian Zones
- Wild and Scenic Rivers
- Wilderness
- Native American Religious Concerns: Consultation with the Te-Moak Tribal Council, the Elko, Wells, Battle Mountain, and South Fork Band Councils, and the Western Shoshone Historic Preservation Society was initiated between January 16-24, 1997. The consultation requested comments as to the effect the project might have on religious, traditional, or cultural areas important to the Western Shoshone people. To date, one letter has been sent and one phone call has been made to each of the above-mentioned Western Shoshone groups requesting comment. Only one response has been received thus far; the South Fork Band Council indicated that they have no concerns or comments on the proposed project.

Bureau specialists have further determined that the following resources, although present in the project area, are not affected by the proposed action:

- Recreation
- Socioeconomics

- Geology: The project area lies along the southern margins of the Carlin Trend. Silica-rich sedimentary rocks located within the upper plate of the Roberts Mountain thrust have been moved into the area by tectonic processes. Lower plate rocks, consisting of clastic sediments, were deposited at or near their present location and have been exposed by erosion of the upper plate.
- Rocks hosting the gold mineralization are not exposed at the surface and the depths of the mineralization require the use of underground mining methods. The mineralized zones are closely associated with major high angle structures within the host rocks.
- Lands: Access to the project area can be achieved by traveling west on Interstate Highway 80 from Elko to the Carlin Interchange, south on State Route 278 to Rain Mine Access Road, then east on the Rain Mine Access Road to the Woodruff Creek Exploration Project Area.

Figure 2-1 depicts the proposed Woodruff Creek Exploration Project which would occur within portions of:

- Sections 24, 25, and 26, Township 32 North, Range 52 East
- Sections 19, 28, 29, 30, 31, and 32, Township 32 North, Range 53 East
- Section 6, Township 31 North, Range 53 East

Newmont controls the mining claims and split estate minerals within the project area which are staked for locatable minerals. The rights-of-way (ROW) in the project area are listed in Table 3.1.

**TABLE 3.1
RIGHTS-OF-WAY IN THE VICINITY OF THE
WOODRUFF CREEK EXPLORATION PROJECT AREA**

Serial No.	Type of ROW	Grantee
N-53340	Access Road and Drill Pad	Mobil Oil
N-47510	Powerline	Sierra Pacific Power Company
N-35312	Access Road	Newmont Gold Company

- Livestock Grazing: The Woodruff Creek Exploration Project area is located within the Pine Mountain and Emigrant Springs Allotments. Tomera Ranches Inc., Stonehouse Division c/o Tom and Patsy Tomera are the permittees. There is an average of approximately 6.5 acres per animal unit month (AUMs) based on the adjudication map for the area (Warren, 1996). Approximately 500 AUMs are permitted on the Pine Mountain Allotment and 477 AUMs are permitted on the Emigrant Springs Allotment within the project boundary. The period of use by the permittee is April 16 through November 30. The proposed project would not result in the loss of any grazing privileges to the permittees.

3.1.1 Water Resources

Surface Water

The Woodruff Creek Exploration Project area includes several ephemeral and one seasonal intermittent drainages that flow only during seasonal storm events. These drainages are tributaries to Woodruff Creek. Woodruff Creek is perennial in portions of Section 24 and 25, Township 32 North, Range 52 East. The project area also contains Stump Spring and 19 unnamed spring located throughout the project area. The location of Woodruff Creek and the springs are shown on Figure 2-1. There is limited data on the water quality within the project area. The available data indicates the proposed project would not effect the surface water. Section 28, Township 32 North, Range 53 East is within the Dixie Creek Watershed. Dixie Creek has a watershed management plan because of sediment problems and fisheries issues (Marchio, 1997). Dixie Creek lies outside of the project area.

Groundwater

Groundwater hydrology in the vicinity of the proposed Woodruff Creek Exploration Project area is not well documented. Data from drilling activities are limited and no piezometers have been installed to monitor water levels. Most of the water encountered during drilling activities appears to originate from the Mississippian Chainman Formation, at a depth of approximately 300-350 feet.

3.1.2 Soils

Soils within the project area were mapped at the Order III level by the U.S. Soil Conservation Service (now the Natural Resource Conservation Service) and are described in the *Soil Survey of Tuscarora Mountain Area, Parts of Elko, Eureka, and Lander Counties, Nevada* (USDA-SCS, 1980) and *Elko Central Soil Survey - Draft*. (USDA-SCS, 1985). Nine distinct soil associations, and one consociation have been determined to occur within the Woodruff Creek Exploration Project area boundary (Figure 3-1). These soil units are summarized on Table 3.2.

Each soil association consists of two or more individual soils which have specific characteristics that allow them to be distinguished from other association soils. The consociation consists of one individual soil which has specific characteristics that allow it to be distinguished from other associations. Detailed information of the USDA-SCS Order III data, including the soil series, surface texture, taxonomic classification, landscape position, elevation of the individual soils that occur in each association, permeability, available water capacity,

wind and water erosion hazard, percent slope, and approximate solum range are presented in Appendix A (USDA-SCS, 1980 and USDA-SCS, 1985).

The majority of the map units within the project area have a moderate to high water erosion hazard when disturbed and are also rated poor to very poor to establish seedlings (USDA-SCS, 1980 and 1985).

**TABLE 3.2
SOIL MAP UNITS**

CAD	-	Carstump very gravelly loam, 4 to 30 percent slopes
CC	-	Chen - Pie Creek - Ramires Association
ME	-	Mascamp - Carstump Association
261	-	Linkup - Roca - Vanwyper Association
413	-	Vanwyper - Bilbo - Soughe Association
574	-	Sumine - Cleavage - Cleavage, very cobbly Association
992	-	Eboda - Loncan - Leevan Association
993	-	Eboda - Quartz - Loncan Association
1725	-	Quartz - Cleavage - Loncan Association
1880	-	Chen - Arcia - Cleavage Association

Source: USDA-SCS, 1980 and USDA-SCS, 1985 (Draft).

3.1.3 Vegetation

Vegetation within the project area consists of a sagebrush - upland vegetation. Species present are mountain big sagebrush, antelope bitterbrush, low sagebrush, black sagebrush, Douglas rabbitbrush, serviceberry, snowberry, bluebunch wheatgrass, Thurber needlegrass, Sandberg bluegrass, bottlebrush squirreltail, Idaho fescue, basin wildrye, and cheatgrass (Appendix A).

3.1.4 Wildlife

Mammals likely to occur in the vicinity of the Woodruff Creek Exploration Project area include mule deer, mountain lion, mountain cottontail rabbits, and ground squirrels. Reptiles likely to occur within the area include the short-horned lizard, sagebrush lizard, Western rattlesnake, and garter snake. The golden eagle, sage grouse, chukar, turkey vulture, morning dove, common nighthawk, and flycatcher are bird species likely to frequent the project area. There are no known raptor nests located within the Woodruff Creek Exploration Project area.

However, the Nevada Division of Wildlife (NDOW) has identified two golden eagle nests located two miles from the Woodruff Creek Exploration Project area.

The Woodruff Creek Project area is considered year-long mule deer range; however, the area is not classified as "crucial habitat". Some migration of deer occurs from the north into the project area with increasing numbers of deer during the winter months (NDOW, 1996).

3.1.5 Threatened, Endangered, and Special Status Species

The U.S. Fish and Wildlife Service (USFWS) was consulted in September 1996 to determine the potential or known regional occurrence of threatened, endangered, or special status species within the vicinity of the Woodruff Creek Exploration Project. No threatened or endangered species were identified by the USFWS to occur within the Woodruff Creek Exploration Project area. The USFWS did indicate that the peregrine falcon, an endangered species, may be an occasional migrant through the Woodruff Creek Project area. The USFWS identified 19 "special status species" that may occur in the vicinity of the project area. The special status species are defined by the BLM as former candidate species that are no longer considered by the USFWS to be candidate (BLM Instruction Memorandum No. NV-96-019, 1996a). Special status species identified by the USFWS that may occur within the Woodruff Creek Exploration Project area are listed in Table 3.3. Consultations with NDOW and Nevada Natural Heritage Program (NNHP) did not identify any additional special status species.

The following paragraphs provide a brief description of each species range and habitat preference and the potential for the species or its habitat to occur within the project area.

TABLE 3.3
SPECIES OF CONCERN THAT MAY OCCUR
WITHIN THE WOODRUFF CREEK EXPLORATION PROJECT AREA

Common Name	Scientific Name
Mammals:	
Fringed myotis	<i>Myotis thysanodes</i>
Long-eared myotis	<i>Myotis evotis</i>
Long-legged myotis	<i>Myotis volans</i>
Pacific Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>
Pale Townsend's big-eared bat	<i>Plecotus townsendii pallescens</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Small-footed myotis	<i>Myotis ciliolabrum</i>
Spotted bat	<i>Euderma maculatum</i>
Yuma myotis	<i>Myotis yumanensis</i>

TABLE 3.3 (continued)
SPECIAL STATUS SPECIES THAT MAY OCCUR
WITHIN THE WOODRUFF EXPLORATION PROJECT AREA

Common Name	Scientific Name
Birds:	
Black tern	<i>Chlidonias niger</i>
Ferruginous hawk	<i>Buteo regalis</i>
Least bittern	<i>Lxobrychus exilis hesperis</i>
Northern goshawk	<i>Accipiter gentilis</i>
Peregrine falcon	<i>Falco peregrinus anatum</i>
Western burrowing owl	<i>Athene cunicularia hypugea</i>
White-faced ibis	<i>Plegadis chihi</i>
Plants:	
Grouse Creek milk-vetch	<i>Arabis falcatoria</i>
Jan's catchfly	<i>Silene nachlingerae</i>
Least phacelia	<i>Phacelia minutissima</i>
Nevada willowherb	<i>Epilobium nevadense</i>

Vegetation

The USFWS identified the Grouse Creek milk-vetch, Nevada willowherb, least phacelia, and Jan's catchfly as special status species, possibly occurring in the vicinity of the proposed project. Of these species identified by USFWS, suitable habitat for the least phacelia may occur within or near the Woodruff Creek Project area.

Grouse Creek milk-vetch

The Grouse Creek milk-vetch occurs on gravelly soils in open, undisturbed, wind-swept ridge tops (Holland, 1996). The species is rare and occurs at elevations of 6,600 to 9,000 feet (Kartesz, 1988). Because of the topographic nature of the project site, it is unlikely that the Grouse Creek milk-vetch and habitat requirements for the species would occur. The closest known population of this species is over 175 miles away to the northeast.

Nevada willowherb

The Nevada willowherb occurs at elevations 7,400 to 9,200 feet (Kartesz, 1988). Due to the elevational ranges of the species, it is unlikely that the Nevada willowherb would occur within the project area.

Least phacelia

Least phacelia occurs on gravelly soils on moist slopes to sunny flats in the mountains at elevations of 6,000 to 7,800 feet AMSL (Kartesz, 1988). The species occurs in seasonably dry riparian meadows at elevations as high as 9,000 feet AMSL. Portions of the Woodruff Creek Project area may provide suitable habitat for the least phacelia. The closest known population of this species is in the Independence Mountains, over 50 miles away to the north.

Jan's catchfly

Jan's catchfly occurs on mountain slopes on limestone soil with *Pinus* (species of conifers) (Kartesz, 1988). Elevations for this species range from 9,500 to 10,200 feet. Due to the high elevational range of this species, it is unlikely that the species occurs within the Woodruff Creek Project area.

Wildlife

Species of concern for which suitable habitat may occur within or near the Woodruff Creek Exploration Project area include pygmy rabbit and western burrowing owl. Foraging habitat may exist within the Woodruff Creek Exploration Project area for the peregrine falcon, spotted bat, small-footed myotis, fringed myotis, long-legged myotis, northern goshawk, and ferruginous hawk.

Peregrine falcon

The most common habitat characteristic of the peregrine falcon is the presence of tall cliffs, which serve as both nesting and perching sites (Johnsgard, 1990). Two other habitat needs include a water source close to the nest site and an adequate prey base. Historically in northeastern Nevada, peregrine nests are associated with extensive wetlands. The peregrine falcon may be an occasional migrant in the project area. It is highly unlikely that the peregrine falcon would utilize the Woodruff Creek Exploration Project area for foraging. No nesting habitat exists within the area.

Pygmy rabbit

Pygmy rabbits are found most frequently in areas of dense, tall sagebrush in the vicinity of seasonal or perennial streams where soils are deep and suitable for digging burrows. The pygmy rabbit habitat ranges from 4,000 to 8,000 feet AMSL (Bradley, 1997). Based on the species requirements, suitable habitat for the pygmy rabbit may occur within the Woodruff Creek Exploration Project area.

Spotted bat

The spotted bat roosts primarily in cliffs usually composed of sedimentary rock containing vertical cracks and crevices that provide cover. Roosting sites are usually selected near water sources for foraging on moths (Arizona Game and Fish Department, 1993; Easteria, 1970; Wai-Ping and Fenton, 1989). The spotted bat typically flies approximately six to ten kilometers from its roosting site to forage. No roosting habitat for the spotted bat exists within or in the vicinity of the Woodruff Creek Exploration Project area. Therefore, it is unlikely that the species occurs within the project area.

Small-footed myotis

The small-footed myotis tends to occur around rocky environments; however, it may be found in a variety of other habitats such as forests, near watercourses, and even in desert-like areas in central Idaho (Zevenhoff, 1988). The species roosts in caves, mines, buildings, and trees and is usually found below elevations of 6,500 feet. No potential roosting habitat is present within the Woodruff Creek Exploration Project area; however, the species may forage in the area.

Long-eared myotis

The long-eared myotis typically inhabits conifer forests and pinon-juniper communities occurring in the mountains. Roosting areas can be found in buildings, hollow trees, caves, mines, cliff crevices, and sink holes. No suitable roosting habitat exists for the long-eared myotis within the Woodruff Creek Exploration Project area.

Fringed myotis

The fringed myotis inhabits a wide variety of environments, from desert scrub communities to fir tree stands in the mountains. Pinon woodlands and oak communities seem to be one of the most commonly used community types. This species roosts in caves, mine tunnels, and buildings. No suitable roosting habitat exists for the fringed myotis within the Woodruff Creek Exploration Project area.

Long-legged myotis

The long-legged myotis primarily inhabits pinon-juniper, oak, and coniferous forests, but may also be found along watercourses and in deserts (Zevenhoff, 1988). The species roosts in buildings, rock crevices, cliffs, and trees. In many areas, they are known to be associated with water, often being observed flying 10 to 15 feet over ponds, streams, water tanks, and open meadows (Arizona Game and Fish Department, 1993). No roosting habitat exists for the long-

legged myotis within the Woodruff Creek Exploration Project area; however, the species may forage in the area.

Yuma myotis

The Yuma myotis roosts in caves and buildings. No roosting habitat exists for the Yuma myotis within the Woodruff Creek Exploration Project area.

Pale Townsend's big-eared bat

The Pale Townsend's big-eared bat is often found in scrub plant communities as well as pine, pinon-juniper, and deciduous forests. The species roosts in caves, buildings, and mines. No roosting or foraging habitat exists within the Woodruff Creek Exploration Project area.

Pacific Townsend's big-eared bat

The Pacific Townsend's big-eared bat inhabits a variety of communities including coastal conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands and deserts, and high-elevation forests and meadows. The species roosts in limestone caves, lava tubes, mine tunnels, buildings, and other human-made structures (Williams, 1986). No roosting or foraging habitat exists within the Woodruff Creek Exploration Project area.

Northern goshawk

The northern goshawk inhabits mountain forests in spring and summer with some altitudinal migration into foothills and valleys in the winter (Terres, 1980). Aspen groves are the preferred nesting sites for the northern goshawk in Nevada (Ryser, 1985), with nest trees typically located within 100 feet of water (Herron, et.al., 1985). The northern goshawk may be an occasional migrant in the project area. No suitable nesting habitat occurs within the Woodruff Creek Exploration Project area. The northern goshawk may migrate through, but, it is unlikely that goshawks spend any extensive time here, even to forage.

Western burrowing owl

Western burrowing owls prefer open treeless flatlands in which to select burrows. The species typically uses abandoned burrows of ground dwelling animals such as badger, coyote, and ground squirrels to roost and nest in (Herron, et.al., 1985). Their habitat includes areas of grasses, forbs, and early shrub stages from annual grassland up to ponderosa pine type (BLM, 1996c). The western burrowing owl habitat ranges from 2,000 to 7,000 feet AMSL (Bradley,

1997). Based on the species habitat requirements, the western burrowing owl may occur within the Woodruff Creek Exploration Project area.

Ferruginous hawk

In Nevada, the ferruginous hawk is dependent on scattered juniper trees found at the interface of the pinon-juniper and desert shrub communities for nesting habitat (Herron, et.al., 1985). The species nests in areas that overlook broad expanses of open ground that provides an adequate supply of rodents and rabbits. The ferruginous hawk may forage within the Woodruff Creek Exploration Project area; however, no nesting habitat occurs within the area.

Black tern

The Black tern nests in smaller ponds and marshes. No habitat for the Black tern exists within the Woodruff Creek Exploration Project area.

Least bittern

The least bittern requires emergent freshwater marshes containing tall cattails and sedges. No habitat for the least bittern exists within or in the vicinity of the Woodruff Creek Exploration Project area.

White-faced ibis

The white-faced ibis nests in emergent vegetation with a preference for tules. No habitat for the white-faced ibis exists within the Woodruff Creek Exploration Project area.

3.1.6 Visual Resources

The Woodruff Creek Exploration Project is located within Class III and Class IV Visual Resources Management (VRM) areas. Class III VRM areas may contain contrasts to the basic landscape elements which are evident but remain subordinate to the existing landscape. Class IV VRM areas may contain contrasts which are evident and are the dominant feature of the landscape, but repeat the form, line, color, and texture of the characteristic landscape. Manmade features within the project vicinity include the Rain Mine access road, a powerline, exploration roads, and drill pads.

Land forms are rolling and rounded with moderate to steep slopes. Landscape colors include reddish brown and dark gray (soil and rock outcrops) and gray-green (vegetation). Previous

...und so weiter. Einmal ist es wichtig, dass man die richtige Zeit für die Reise wählt, um nicht zu viel zu bezahlen.

Ein Beispiel: Wenn Sie eine Reise nach Südkorea buchen, dann ist es wichtig, dass Sie die Reise im Sommer buchen, da es sonst zu viel zu bezahlen wäre. Wenn Sie jedoch eine Reise nach Südkorea im Winter buchen, dann ist es besser, dass Sie die Reise im Herbst buchen, da es sonst zu viel zu bezahlen wäre. Wenn Sie jedoch eine Reise nach Südkorea im Frühling buchen, dann ist es besser, dass Sie die Reise im Sommer buchen, da es sonst zu viel zu bezahlen wäre.

Ein weiteres Beispiel: Wenn Sie eine Reise nach Südkorea buchen, dann ist es wichtig, dass Sie die Reise im Sommer buchen, da es sonst zu viel zu bezahlen wäre. Wenn Sie jedoch eine Reise nach Südkorea im Herbst buchen, dann ist es besser, dass Sie die Reise im Sommer buchen, da es sonst zu viel zu bezahlen wäre.

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mineral exploration activities, similar to those proposed, have created horizontal to very shallow diagonal lines and have exposed the dark gray and reddish brown soils.

3.1.7 Cultural Resources

From 1983 to 1996, eight Class III cultural resource (CR) inventories (CR Reports: 1-685 (P), 1-1026 (P), 1-1122 (P), 1-1263 (P); 1-1365 (N), 1-1369 (P), 1-1706 (P), and 1-1593 (P)) have been conducted on the public and split estate lands within and adjacent to the project area. The inventories were conducted to determine if any cultural resources exist in the project area and, if so, whether they may be eligible for inclusion in the National Register of Historic Places (NRHP) (Newsome, 1996).

Thirty-one archaeological sites and thirty-eight isolated artifacts were found to be present within the Woodruff Creek Exploration Project area. Of these 31 sites, 25 sites have been determined ineligible for inclusion in the NRHP because they lack the potential to significantly contribute to the understanding of the prehistory and history of the area. No further evaluation is required at these ineligible sites. Of the 31 sites, six (CRNV-11-9093, CRNV-11-9094, CRNV-11-9098, CRNV-11-9099, CRNV-11-9110, and CRNV-11-9111) are considered eligible for inclusion in the NRHP under criterion D of 36 CFR 60.4. These data are documented in report BLM 1-1593 (P), on file at the BLM Elko Field Office.

3.2 NO ACTION ALTERNATIVE

The description of the affected environmental for the No Action alternative would be the same as that for the proposed action.

Woharla, where we later arrived. Between 1993 and 1995, we made a total of 10 visits to Woharla, and during those visits we made a total of 100 observations of 10 different species of birds.

RESULTS

In 1993, we recorded 10 species of birds at Woharla, and in 1994, we recorded 11 species. In 1995, we recorded 12 species. The species recorded were: *Spurred Cuckoo-shrike* (Cuculus micropterus), *White-throated Kingbird* (Tyrannus albogularis), *Blue-faced Kingbird* (Tyrannus cyanurus), *Black-headed Grosbeak* (Pheucticus melanocephalus), *Red-eyed Vireo* (Vireo olivaceus), *Blue-gray Gnatcatcher* (Polioptila caerulea), *Blue Grosbeak* (Guiraca caerulea), *White-tailed Kite* (Elanus leucurus), *Red-tailed Hawk* (Buteo jamaicensis), *Common Grackle* (Quiscalus quiscula) and *Great-tailed Grackle* (Quiscalus mexicanus).

The most abundant species was the *Blue-faced Kingbird*, which was seen on all 10 visits to Woharla. This was followed by the *Blue-gray Gnatcatcher*, which was seen on 9 of the 10 visits. The *Red-tailed Hawk* was the next most abundant species, seen on 8 of the 10 visits. The *Red-eyed Vireo* was seen on 7 of the 10 visits. The *White-tailed Kite* was seen on 6 of the 10 visits. The *Common Grackle* was seen on 5 of the 10 visits. The *Blue-gray Gnatcatcher* was seen on 4 of the 10 visits. The *White-throated Kingbird* was seen on 3 of the 10 visits. The *Blue Grosbeak* was seen on 2 of the 10 visits. The *Black-headed Grosbeak* was seen on 1 of the 10 visits. The *Great-tailed Grackle* was seen on 1 of the 10 visits.

DISCUSSION

The results of our study indicate that the bird community at Woharla is similar to that found in other parts of the state of Chiapas, Mexico. The species recorded at Woharla are also found in other parts of the state of Chiapas, Mexico.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 PROPOSED ACTION

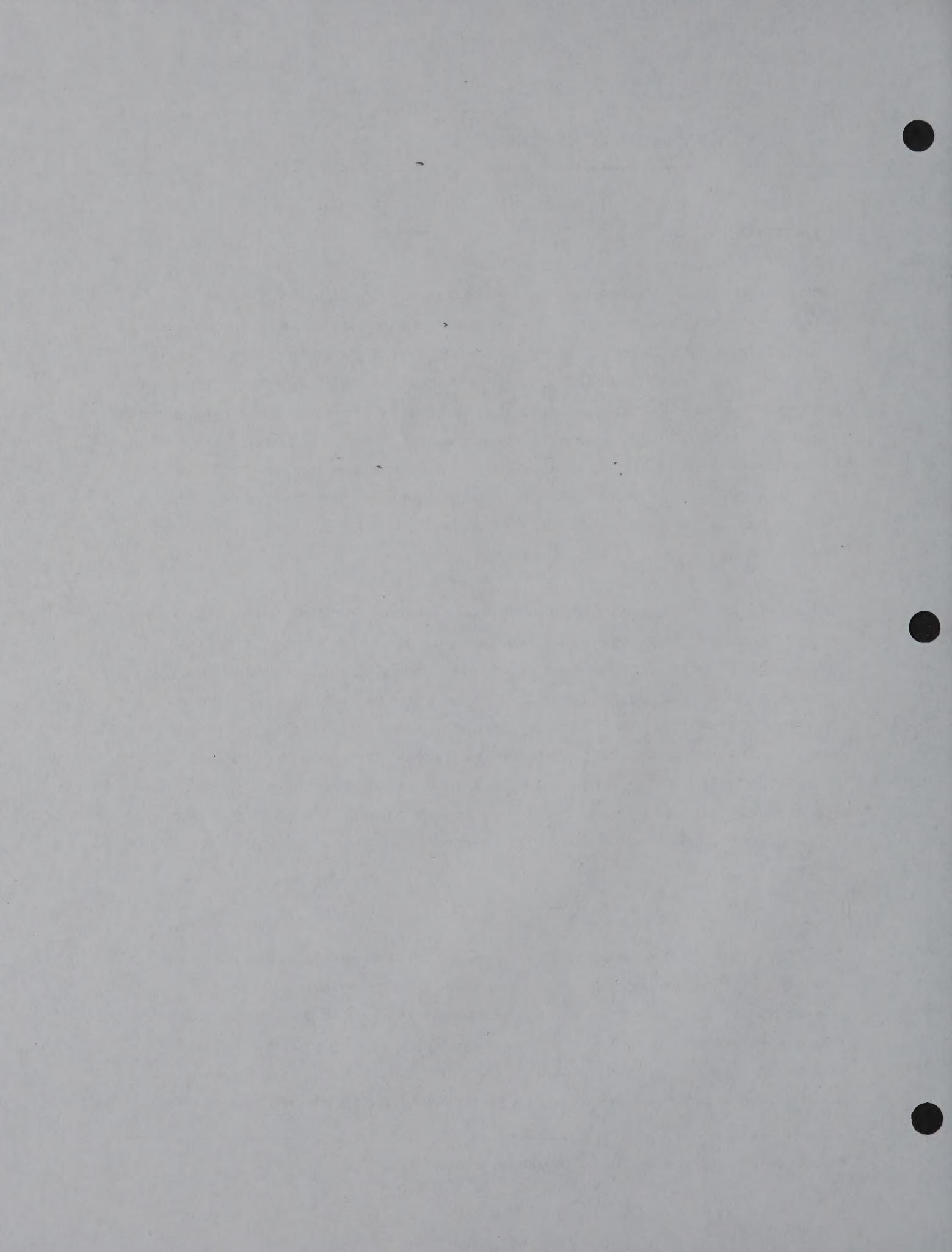
4.1.1 Water Resources

Although perennial, intermittent, and ephemeral surface water resources exist within the project area, proposed exploration activities would avoid all surface water. Therefore, the proposed Woodruff Creek Exploration Project would not result in impacts to surface water resources. The Woodruff Creek Exploration Project does have the potential to create erosion and increase sediment from the development of exploration access roads, drill sites, and trench preparation. Proposed environmental protection measures, identified in Section 2.2, would keep indirect impacts to surface waters to a minimum by using Best Management Practices. Should indirect impacts to water resources occur, they would be temporary, lasting until drill holes are plugged and exploration roads, drill sites, and trenches are successfully reclaimed with vegetation.

Proposed exploration activities could result in potential direct impacts to groundwater resources since the proposed drilling activities may intercept groundwater. If groundwater is encountered, indirect impacts created could include erosion if the water is discharged. Should impacts to groundwater occur, they would occur sporadically as drill sites are developed throughout the 6,490-acre project area as operations are conducted over the proposed three-year Plan of Operation. If perched aquifers are encountered, the aquifer could be drained. However, all holes would be plugged according to NAC 534, thus avoiding a potential problem. Environmental protection measures have been incorporated into the proposed action (Section 2.2) which, when implemented, would reduce direct and indirect impacts to groundwater resources.

4.1.2 Soils

Direct impacts to soils would result from the construction, development, and use of access roads, drill sites, sumps, and trenches and include the modification of soil physical characteristics, loss of soil to wind and water erosion, and decreased soil biological activity. Changes would result from mixing soil horizons which reduce the organic matter content of surface soil and may lower soil productivity. In areas of concentrated drilling, the water erosion hazard is primarily moderate and the wind erosion hazard is primarily slight. Runoff



would increase when soils are disturbed. Most of the subject soils have rapid runoff. Current reclamation activities in the area have proven successful in the recent past. Total disturbance to soil resources from the proposed project would be approximately 59 acres.

When access roads are developed, soils salvaged would be bermed along the side of the road. Newmont estimates that an average depth of six inches of soil material would be temporarily removed; this equates to approximately 47,500 cubic yards of soils salvaged. The maximum amount of displaced soil would not occur all at once, nor at one location, but would occur as drill sites, roads, and trenches would be developed. Impacts to soils would be dispersed over the 6,490-acre project area and would occur sporadically during the three-year drilling program. In addition, cross-country travel and existing access roads would be utilized to reduce surface disturbance whenever possible. Minimal impacts to the soils would result due to the replacement of all soils during reclamation and the use of Best Management Practices such as, but not limited to, silt traps and fences, sediment ponds, and/or settling basins (see Section 2.2.10). Additionally, the disturbance activities would occur over a three-year period of time.

4.1.3 Vegetation

The direct impact from the proposed project would be the disturbance of 59 acres of sagebrush-upland communities. Newmont plans to revegetate exploration disturbance as described in Section 2.2.13. Revegetation success may be hindered by generally low soil permeability, low available water capacity, and high water erosion potential (see Appendix A). Exploration activities would utilize Best Management Practices to keep direct impacts to vegetation to a minimum. After exploration activities cease, vegetation would progressively become reestablished in disturbed areas by both reseeding and recolonization.

Disturbances created would mostly be short-term and linear (roads) or patchy (drill sites) in form. This type of development would be readily available for recolonization from vegetation in the surrounding areas.

4.1.4 Wildlife

Impacts to wildlife (such as common mammals, reptiles and birds) would consist of temporary habitat loss, wildlife displacement as a direct result of the removal and/or crushing of vegetation cover, and disturbance from human activity and noise. Wildlife may tend to avoid active drilling sites until drilling activities cease. The Woodruff Creek Exploration Project would result in the temporary loss of 59 acres of sagebrush-upland habitat. This impact would not

operado. Alguns bairros possuem ruas medias entre 6 e 10m, resultando em menor densidade populacional, mas outros, como o bairro da Glória, possuem ruas com 12m de largura.

Em virtude desse tipo de estrutura urbana, é comum que os bairros possuam ruas com larguras entre 6 e 10m, resultando em menor densidade populacional, mas outros, como o bairro da Glória, possuem ruas com 12m de largura. No entanto, é importante ressaltar que a maioria das ruas possuem larguras entre 6 e 10m, o que resulta em menor densidade populacional. Isso é importante porque, embora a maior parte das ruas possua larguras entre 6 e 10m, existem algumas ruas com larguras maiores, que podem ser consideradas excepcionais. Por exemplo, a Rua das Flores, no bairro da Glória, possui uma largura de 12m, o que é considerado excepcional. No entanto, é importante ressaltar que a maioria das ruas possuem larguras entre 6 e 10m, o que resulta em menor densidade populacional. Isso é importante porque, embora a maior parte das ruas possua larguras entre 6 e 10m, existem algumas ruas com larguras maiores, que podem ser consideradas excepcionais. Por exemplo, a Rua das Flores, no bairro da Glória, possui uma largura de 12m, o que é considerado excepcional.

Além disso, é importante ressaltar que a maioria das ruas possuem larguras entre 6 e 10m, o que resulta em menor densidade populacional. Isso é importante porque, embora a maior parte das ruas possua larguras entre 6 e 10m, existem algumas ruas com larguras maiores, que podem ser consideradas excepcionais. Por exemplo, a Rua das Flores, no bairro da Glória, possui uma largura de 12m, o que é considerado excepcional.

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occur all at once, but would occur sporadically throughout the 6,490-acre project area within a three-year project life as drill sites are developed. Impacts to wildlife habitat would not eliminate or impact wildlife territories or populations.

Raptors, such as the golden eagle and common nighthawk may forage over the project area; however, activities resulting from the Woodruff Creek Exploration Project are not anticipated to impact any raptor species.

Soil disturbances and compaction may destroy animal burrows, injure or kill less mobile wildlife species, or trap wildlife in deep burrows. These incidents would not be expected to have an impact on the wildlife community due to the fact that drilling activities would occur sporadically throughout the project area and the proposed disturbance represents less than one percent of the total project area (6,490 acres).

Mule deer are known to frequent the Woodruff Creek Exploration Project area. Impacts to mule deer would be the temporary removal of habitat and potential forage (59 acres). Impacts to mule deer would occur gradually as exploration activities develop over the three-year project life. In addition, this reduction of habitat and forage represents less than one percent of the total habitat and forage available within the project area. Therefore, minimal to no impacts to mule deer are likely.

4.1.5 Threatened, Endangered, and Special Status Species

Vegetation

There are no known threatened or endangered species occurring within the Woodruff Creek Exploration Project area. Therefore, the proposed action would not result in any impacts to threatened or endangered species. The least phacelia, a special status species, inhabits moist soils normally associated with the edges of wet meadows or drainages. Proposed exploration activities would avoid all surface waters and associated riparian habitat. This type of habitat is very limited in the project area. The least phacelia is not expected to be impacted by the Woodruff Creek Exploration activities.

Wildlife

The proposed action would have no impacts to threatened or endangered species because none are known to utilize habitat on or near the project area. The project area has been identified as having suitable habitat for the pygmy rabbit and burrowing owl; both are special status

en d'altres. Els resultats són molt variables i depenen de la qualitat dels suports i dels procediments d'elaboració. Una bona tècnica es la de treure una sèrie de fotografia en blanc i negre de la imatge original i d'una altra que es fa amb un colorant que no es veu en la imatge original.

Una vegada que s'ha fet això, es pot fer una fotografia en color de la imatge original i d'una altra que es fa amb un colorant que no es veu en la imatge original. Així, es pot saber si la imatge original ha estat alterada o no.

Si el colorant que s'ha utilitzat és un colorant que no es veu en la imatge original, es pot saber que la imatge original ha estat alterada. Si el colorant que s'ha utilitzat és un colorant que es veu en la imatge original, es pot saber que la imatge original no ha estat alterada.

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species. There is no inventory of the project area. However, the pygmy rabbit and the western burrowing owl inhabits elevations from 4,000 to 7,000 feet AMSL. Less than one percent of the project area is suitable habitat for the pygmy rabbit and western burrowing owl; less than one percent of the suitable habitat could be potentially disturbed.

4.1.6 Visual Resources

Short-term impacts to line and color would result from the proposed action. The horizontal and shallow diagonal bands and lines from the exploration roads, trenches, and drill pads would create moderate color and line contrasts with the characteristic landscape. Moderate color contrasts would result from the vegetation removal associated with road and drill pad construction.

Successful reclamation of the exploration roads, trenches, and drill pads would reduce the long-term visual impacts of the proposed action. Class III and IV VRM objectives would be met.

4.1.7 Cultural Resources

The six unmitigated archaeological sites (CRNV-11-9093; CRNV-11-9094; CRNV-11-9098; CRNV-11-9099; CRNV-11-9110; and CRNV-11-9111) within the project area found eligible for inclusion in the NRHP could be impacted by the proposed action. Damage to these sites could occur through scraping, compacting, or otherwise disturbing the surface and subsurface deposits.

No adverse impacts to cultural resources are expected as a result of the proposed project since Newmont would avoid or mitigate all cultural sites which are potentially eligible for the National Register.

4.2 NO ACTION ALTERNATIVE

Implementation of the No Action Alternative would result in the denial of the proposed Woodruff Creek Exploration Project.

4.3 MITIGATION

4.3.1 Cultural Resources

Prior to initiating the proposed action, Newmont would:

- 1) Stake and/or sign an avoidance area around cultural sites CRNV-11-9093, CRNV-11-9094, CRNV-11-9098, CRNV-11-9099, CRNV-11-9110, and CRNV-

and the same letters will remain. The original file name is retained, and the new file name is CIMA-11-0001-0000, and the original extension is retained, and the new extension is CIMA-11-0001-0000.CAM. The file is saved in the same location as the original file.

RENAME - R.R. This command renames a file. It takes two arguments: the old name and the new name. The old name must be a valid file name, and the new name must be a valid file name. The command also takes an optional argument, which specifies the extension of the new file. If no extension is specified, the new file will have the same extension as the old file. The command also takes an optional argument, which specifies the directory where the new file should be created. If no directory is specified, the new file will be created in the current directory.

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11-9111 with steel posts to ensure that a visible barrier is present between the cultural site and the surrounding operations area in order to protect the cultural sites from damage.

- 2) Place avoidance barriers a minimum of 30 meters from the perimeter of the cultural site(s). Where existing roads run through and/or adjacent to the perimeter of the cultural site(s), avoidance barriers would be placed along the roadside.
- 3) Restrict any maintenance to existing roads within an avoidance area to the limits of the existing road berm.
- 4) Direct its personnel and the personnel of its contractors to avoid all staked and/or signed areas under penalty of Archaeological Resources Protection Act of 1979 (16 U.S.C. 470).

In the event an eligible or unevaluated cultural site is subsequently found to have been damaged by activities associated with the proposed action, Newmont would draft a data recovery plan for the affected site(s) within three months. After the data recovery plan has been accepted by the BLM and the State Historic Preservation Office (SHPO), Newmont would implement data recovery at the affected cultural site(s) within one year of the date of acceptance of the data recovery plan by the BLM and the SHPO.

4.4 CUMULATIVE IMPACTS

All resource values have been evaluated for cumulative impacts. It has been determined that cumulative impacts would be negligible as a result of the proposed action or alternative. The proposed use of best management practices to prevent soil erosion, the implementation of the proposed cultural resources mitigation, the proposed reclamation of all disturbance following operations and the fact that there is no reasonable foreseeable future action leads to this conclusion.

4.5 MONITORING

A BLM representative would make regular field inspections of the Woodruff Creek Exploration Project area. These inspections would be performed throughout construction, operation, and reclamation of the proposed action. All field compliance inspections would be documented into the project file at the BLM office in Elko, Nevada.

and measured frequency of primary infection. Furthermore it shows tests from 1179-120
patients with regard to their age, gender and ethnicity and the
percentage of each group.

and to determine the most effective test to minimize a missed diagnosis and
also to measure the diagnostic yield of each clinical entity. (acute bronchiolitis
and acute bronchitis and bluish staining syndrome). These results will be presented
below.

and also on this conference we will discuss the importance of early detection and treatment
and how to prevent the spread of infection.

Finally we have the opportunity to learn more about the prevention of RSV.
to you, thank you very much, bangla medical society, IOMA, GOMI, BFI, BCFR

and first of all, we would like to thank our colleagues in the field of pulmonology for their support
and help. Many thanks to our colleagues who have tried their best to support us
and help us to achieve our goals. We are grateful to our colleagues who have helped us
with their valuable input. We are grateful to our colleagues who have helped us to achieve our goals.
We are grateful to our colleagues who have helped us to achieve our goals.

CUMULATIVE IMPACT

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5.0 CONSULTATION AND COORDINATION

5.1 LIST OF PREPARERS

U.S. Bureau of Land Management - Elko Field Office

Tom Schmidt	Project Lead, Plan Review, Geology, Paleontology
Evelyn Treiman	NEPA Coordination, Visual Resources, Recreation, Wilderness
Beth Clarke	Cultural Resources, Native American Religious Concerns
Kelly Amy	Wetlands/Riparian Zones
Ken Nelson	Lands
Nick Rieger	Hazardous Materials
Tom Warren	Livestock Grazing, Vegetation
Carol Marchio	Soils, Water Resources, Air Quality
Roy Price	Threatened, Endangered, and Special Status Species-Vegetation, Wildlife

WESTEC, Inc.

Valerie Sawyer	Elko Branch Manager
Gary Goodrich	Project Manager
Catherine Clark	Project Scientist
Diane J. Taylor	Staff Scientist

5.2 PERSONS, GROUPS, OR AGENCIES CONSULTED

Elko County

George Boucher	Elko County Manager
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Newmont Gold Company

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Danena M. Ike	Permitting Coordinator II

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Nevada Natural Heritage Program

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P-III Associates, Inc.

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Natural Resource Conservation Service - Work Unit Office, Elko, Nevada

Paul Blackburn **Soil Scientist**

U.S. Fish and Wildlife Service

Carlos Mendoza State Supervisor
Janet Bair Biologist

Te-Moak Tribal Council

Felix Ike Chairman

Western Shoshone Preservation Society

Larry Kibby Director/Consultant

Other Persons Contacted

Bob Holland Plant Ecologist

5.3 PUBLIC NOTICE AND AVAILABILITY

An initial coordination meeting was held on September 4, 1996, between the Elko Field BLM and Newmont to determine the scope of the Woodruff Creek Exploration Project. On September 10, 1996, scoping letters were sent to the U.S. Fish and Wildlife Service, Nevada

W. B. Runcorn and D. A. V. Williams
The effect of acid rain on groundwater flow in the
Welsh Coalfield, UK: a case study of the
Mynydd Cwm Cynwch catchment area

Division of Wildlife, and the Nevada Natural Heritage Program. On October 11, 1996, scoping letters were delivered to the Western Shoshone Historic Preservation Society and Felix Ike, Chairman of Te-Moak Tribal Council. A notice regarding the proposed Woodruff Creek Exploration Project requesting written comments was also published in the *Elko Daily Free Press* and several other newspapers, September 28, 1996. The project was included in the Elko Environmental Calendar in the December 1996 issue. Elko County, George Boucher, Elko County Manager, was notified by the BLM on March 24, 1997. The USFWS, NDOW, and the NNHP are the only agencies to respond to the scoping letters. No additional public comments have been received to date.

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grandeza. El número de trabajos realizados en el campo es menor que el número de trabajos realizados en la industria, pero es más grande que el número de trabajos realizados en la construcción. La cifra de trabajos realizados en la construcción es menor que el número de trabajos realizados en la agricultura, pero es mayor que el número de trabajos realizados en la industria. La cifra de trabajos realizados en la agricultura es menor que el número de trabajos realizados en la construcción, pero es mayor que el número de trabajos realizados en la industria. La cifra de trabajos realizados en la industria es menor que el número de trabajos realizados en la construcción, pero es mayor que el número de trabajos realizados en la agricultura.

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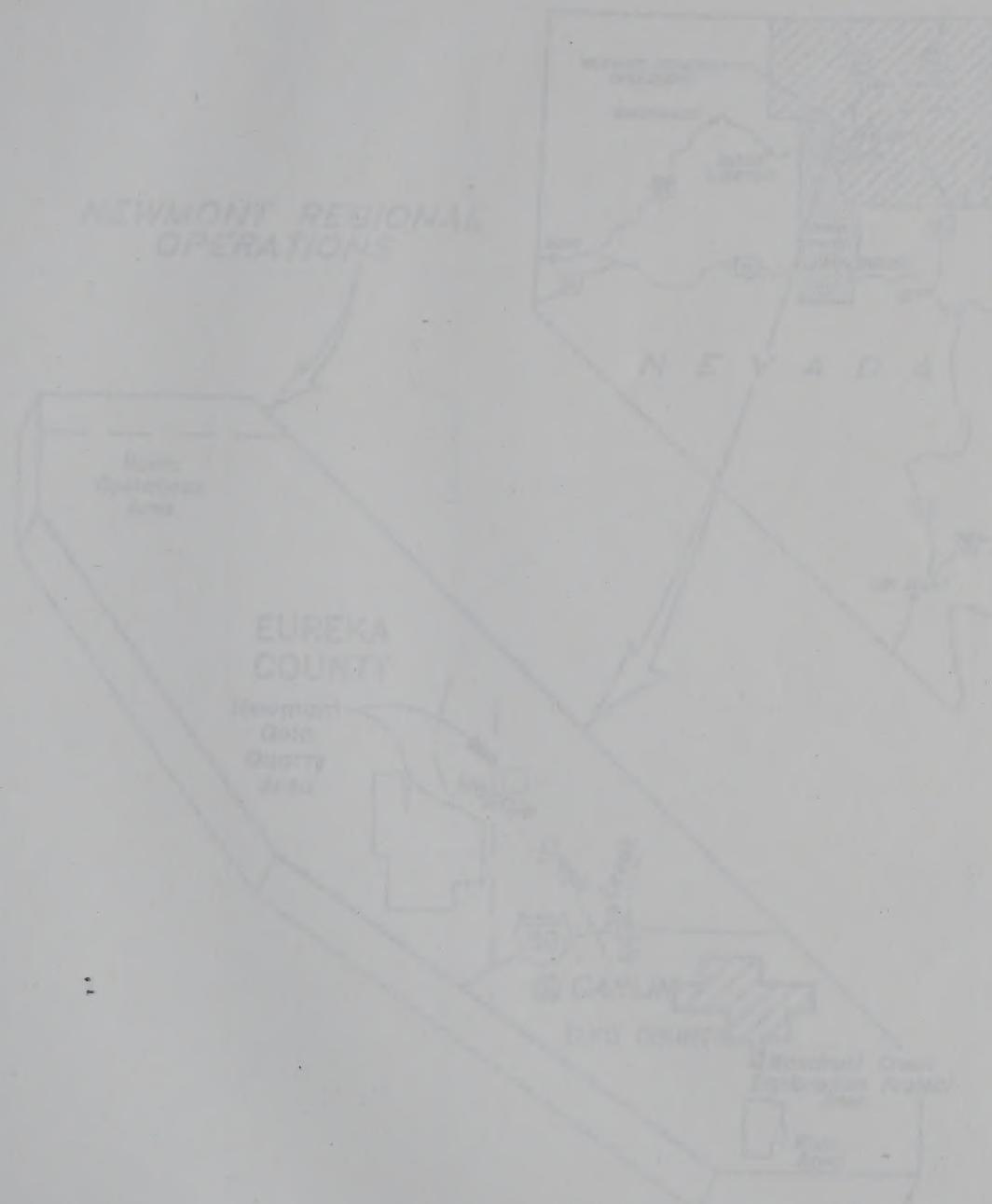
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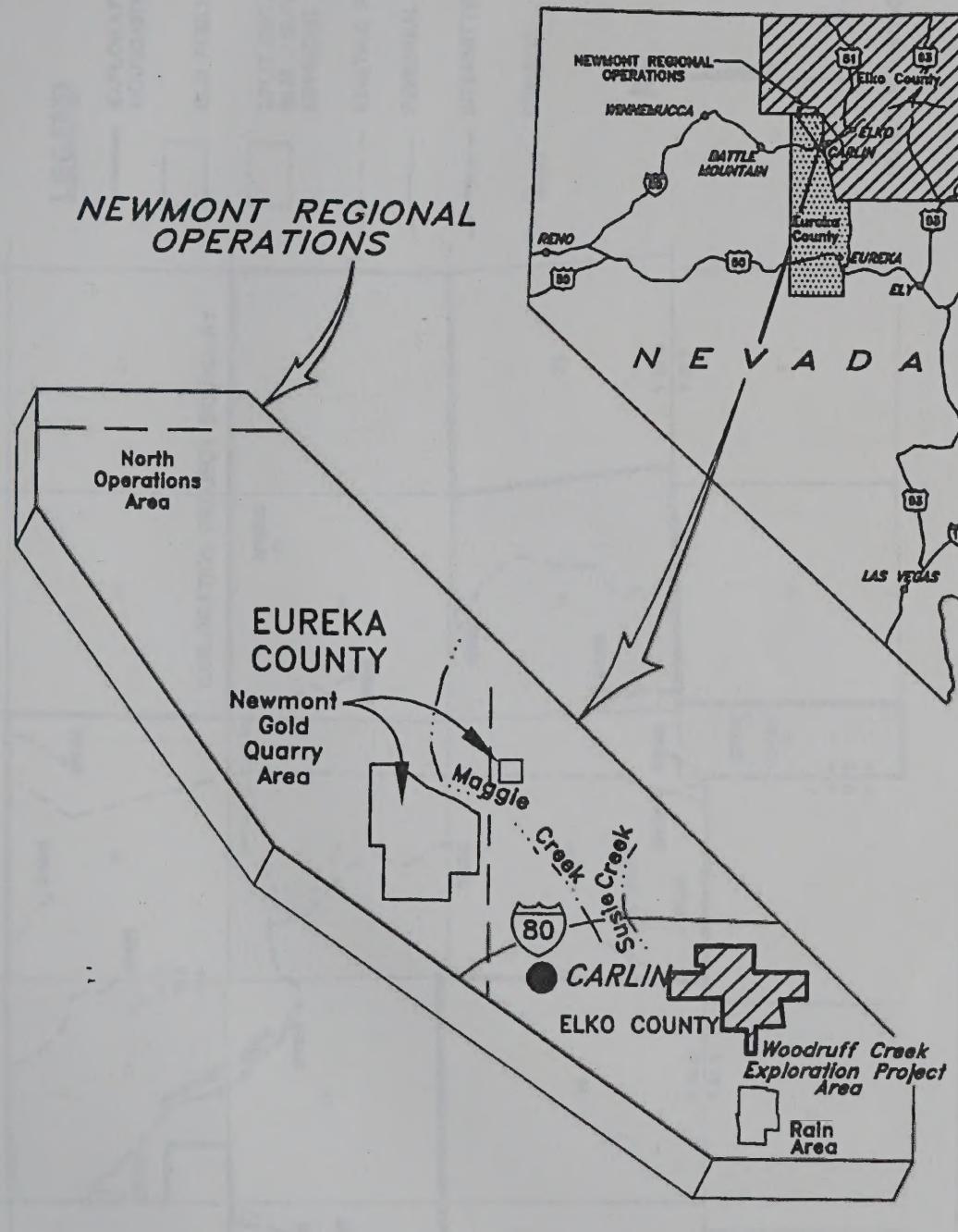
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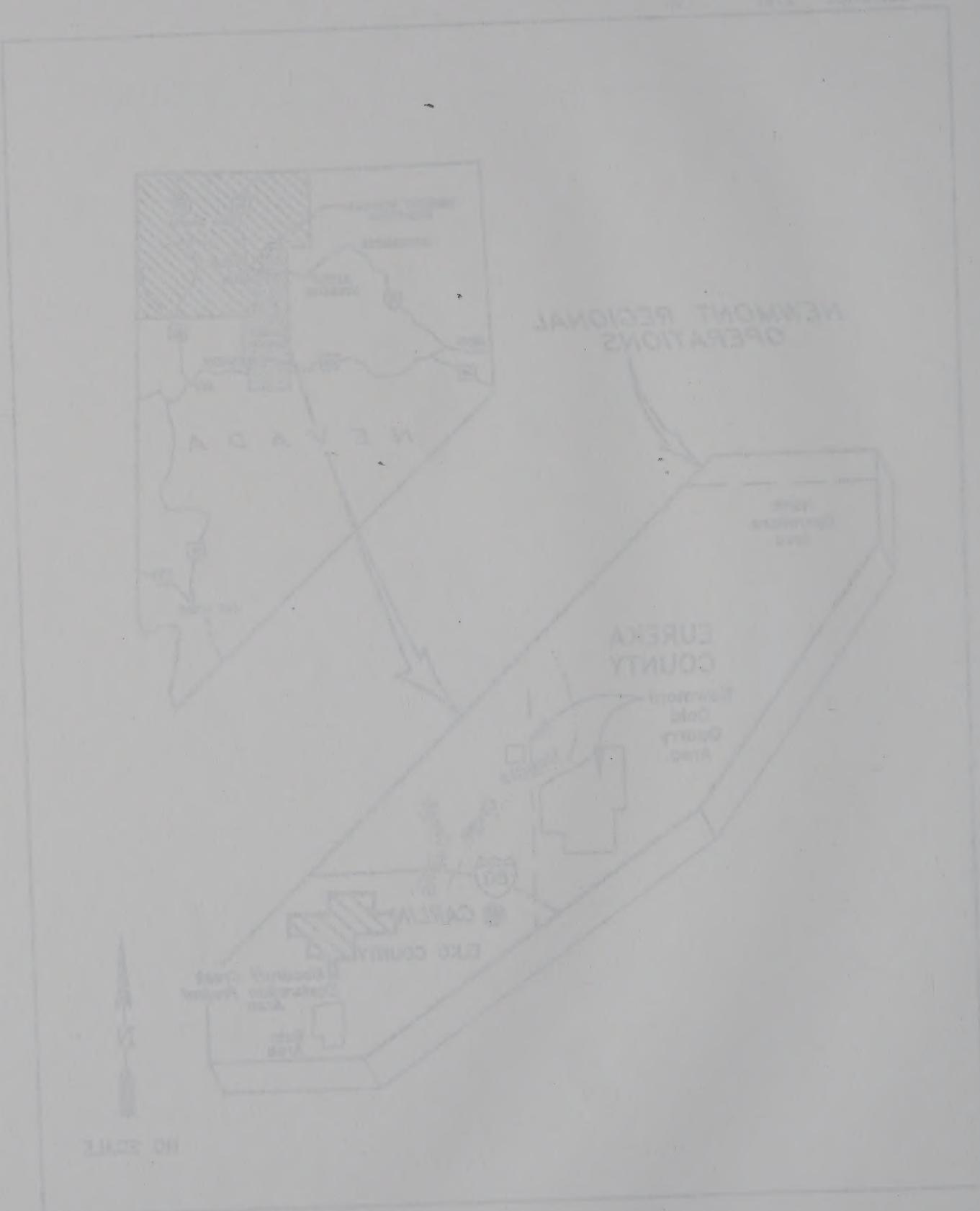
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FIGURES



FIGURES

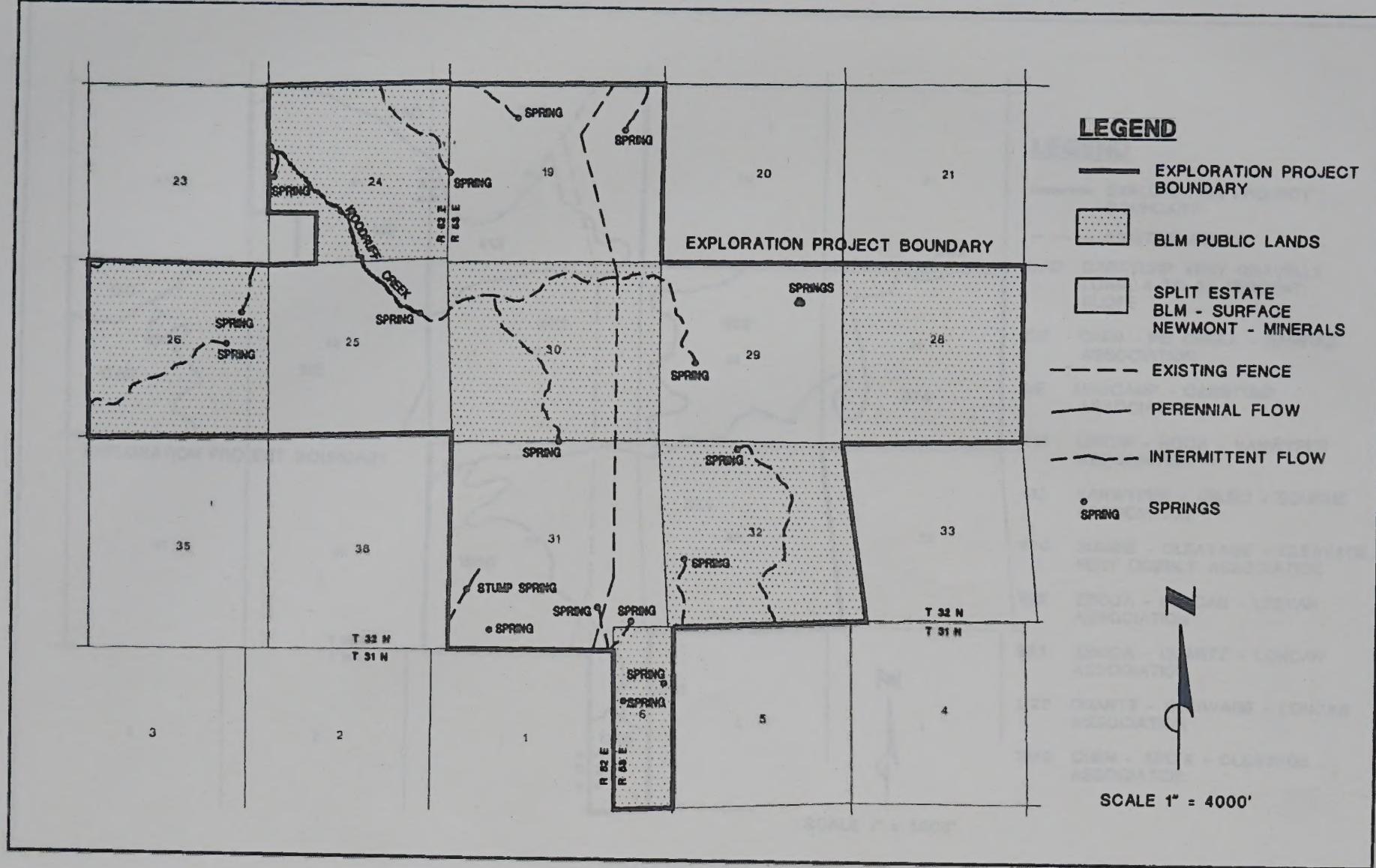




1970 CENSUS

NATIONAL
MAP COLLECTION

TO HIGHLIGHT CENSUS DATA
IN THE COMMUNITY



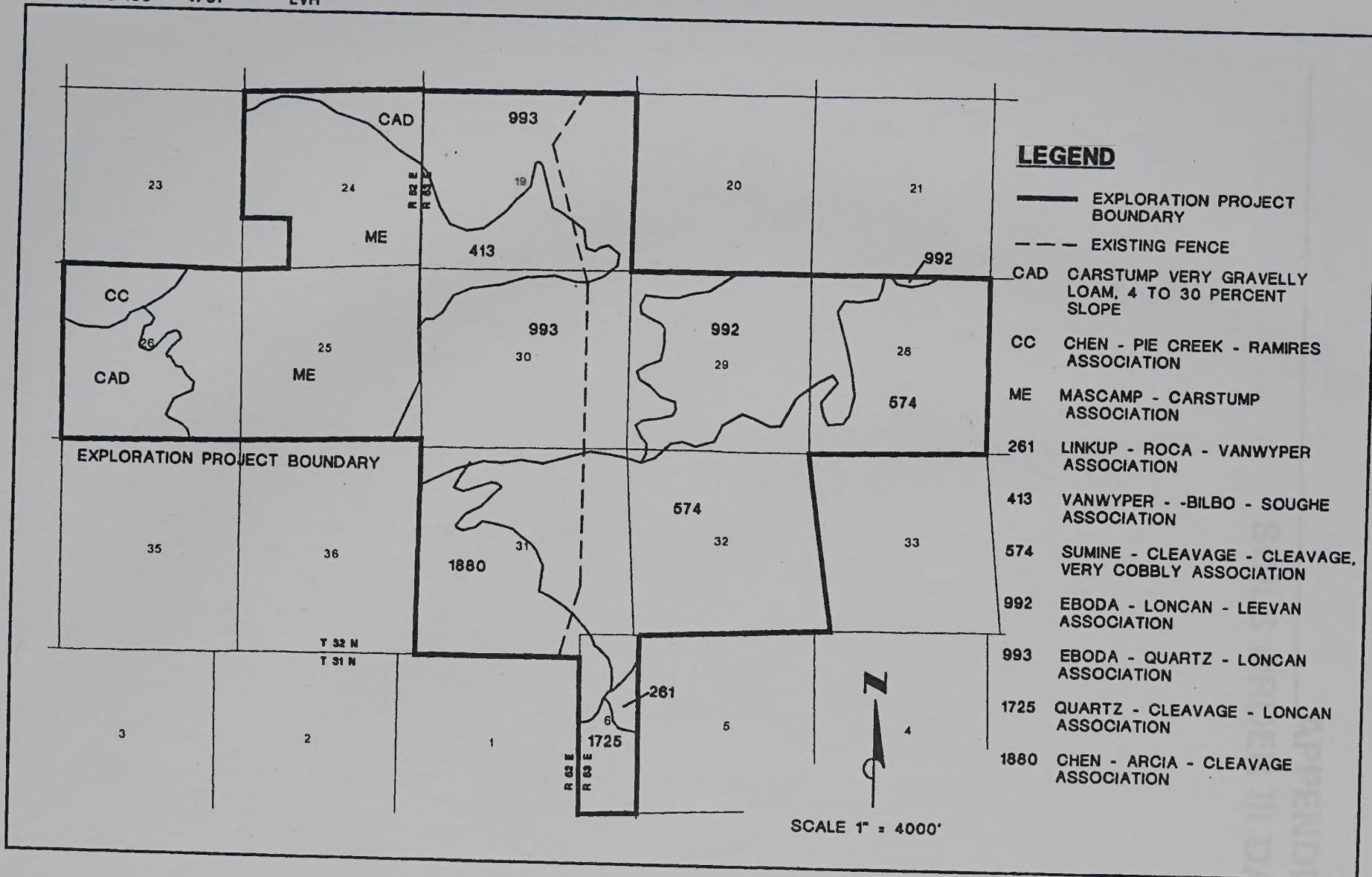
WOODRUFF CREEK EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

FIGURE 1-2
LAND STATUS

PROSES METABOLISASI KARBOHIDRAT
DENGAN ENZYMES ALAT PENGOLAHAN

SAURO
SUTARO



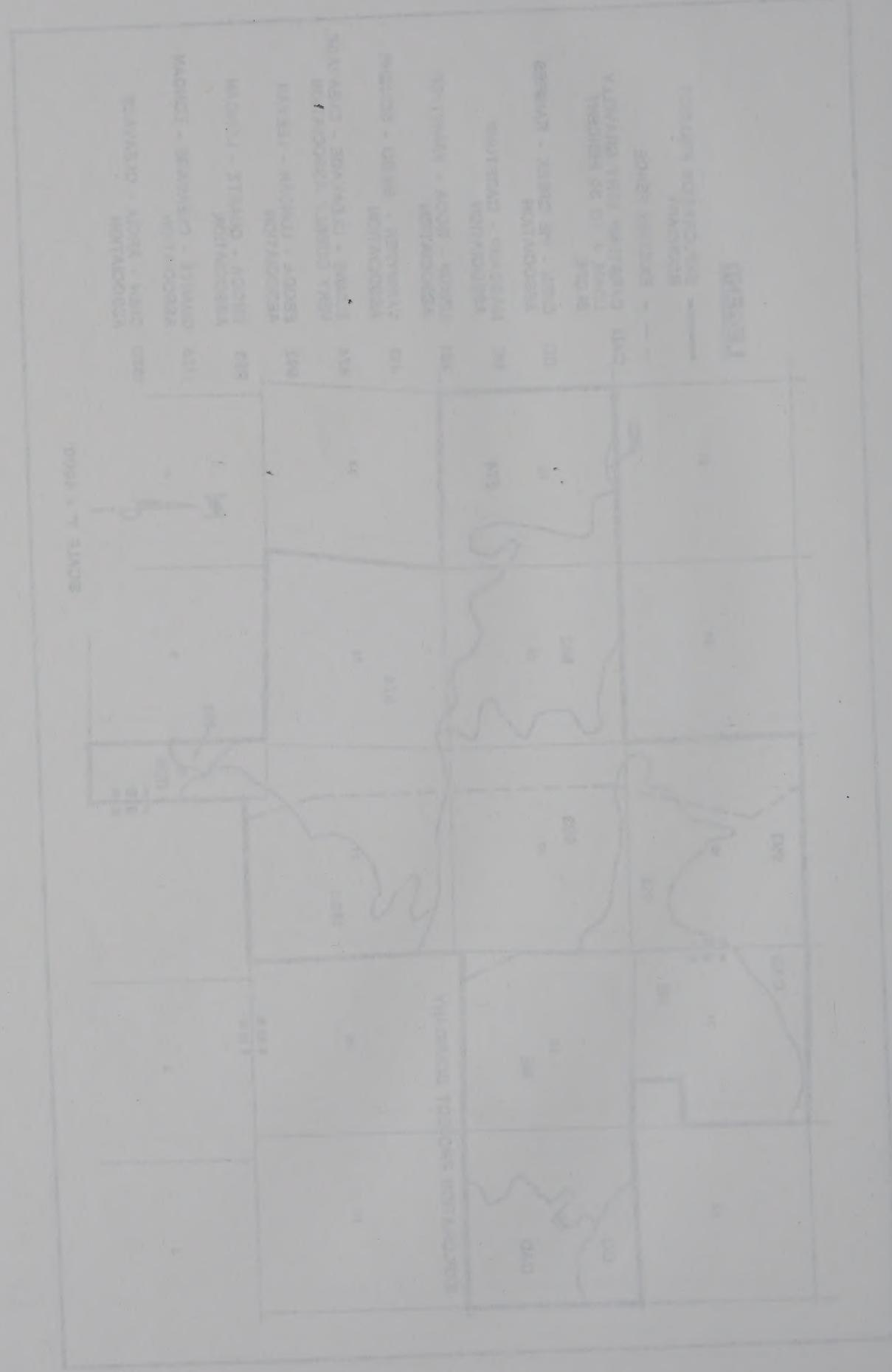


WOODRUFF CREEK EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

FIGURE 3-1
SOILS

SAINT-PIERRE-EN-VERGNE
REGISTRE DES CONSTITUTIONS

B.D.C.
1855



APPENDIX A

SOILS ORDER III DATA

APPENDIX
SOILS ORDER III DATA

APPENDIX A
SOILS ORDER III DATA

APPENDIX A
SOILS IN THE VICINITY OF THE WOODRUFF CREEK EXPLORATION PROJECT AREA

USDA-SCS Map Unit	Soil Series & Surface Texture	Elevation (feet)	Permeability	Available Water Capacity	Erosion Hazard Water/ Wind	Runoff	Dominant Present Vegetation	Landscape position/ % Slope	Approximate Solum Range ² (inches)	Topsoil Rating ¹
CAD Carstump very gravelly loam	Carstump very gravelly loam, 4 to 30 percent slopes	5,500 to 6,000	slow	low	moderate/ slight	medium	big sagebrush, Douglas rabbitbrush, cheatgrass, Sandberg bluegrass	uplands 4-30	20-40	Poor: slope, small stones.
CC Chen-Pie Creek-	Chen cobbly loam	5,500 to 6,500	very slow	very low	high/ slight	rapid	low sagebrush, bluebunch wheatgrass, bottlebrush squiretail	uplands 8-30	12	Poor: slope, small stones, thin layer.
Ramires Assn.	Pie Creek cobbly loam	5,500 to 6,500	very slow	low	high/ slight	rapid	low sagebrush, bluebunch wheatgrass, Sandberg bluegrass	rolling upland hills 15-30	24	Poor: too clayey, slope, large stones.
	Ramires very stony loam	5,500 to 6,500	slow	low	high/ moderate	rapid	big sagebrush, Douglas rabbitbrush, Sandberg bluegrass	interspersed 15-50	20 to 32	Poor: slope, large stones.
ME Mascamp- Carstump Assn.	Mascamp, very gravelly loam	5,500 to 6,000	moderately slow	very low	high/ slight	rapid	big sagebrush, Thurber needlegrass, bottlebrush squiretail, Sandberg bluegrass	sides of uplands 30 to 50	12 to 20	Poor: small stones, slope.
	Carstump, very gravelly loam	5,500 to 6,000	slow	low	moderate/ slight	medium	big sagebrush, Douglas rabbitbrush, cheatgrass, Sandberg bluegrass	ridgetops 4 to 30	20 to 40	Poor: slope, small stones.

APPENDIX A
SOILS IN THE VICINITY OF THE WOODRUFF CREEK EXPLORATION PROJECT AREA

USDA-SCS Map Unit	Soil Series & Surface Texture	Elevation (feet)	Permeability	Available Water Capacity	Erosion Hazard Water/ Wind	Runoff	Dominant Present Vegetation	Landscape position/ % Slope	Approximate Solum Range ² (inches)	Topsoil Rating ¹
261 Linkup- Roca- Vanwyper Assn.	Linkup, very cobbly loam	6,000 to 7,000	slow	1.4" to 2.2"	slight/ slight	rapid	low sagebrush, Douglas rabbitbrush, Sandberg bluegrass	crests and convex side slopes mountain 15-30	8 to 16	Poor: depth to rock, large stones, slope
	Roca, very gravelly loam	6,000 to 7,000	very slow	1.7" to 3.0"	slight/ slight	rapid	big sagebrush, Douglas rabbitbrush, Sandberg bluegrass	concave north-facing side slopes mountains 15-30	20 to 29	Poor: small stones, slope
	Vanwyper, very cobbly loam	6,000 to 7,000	slow	2.2" to 3.2"	slight/ slight	rapid	big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, cheatgrass	smooth south-facing side slopes mountains 15-30	30 to 39	Poor: large stones, slope
413 Vanwyper- Bilbo- Soughe Assn.	Vanwyper, very gravelly loam	5,000 to 6,500	slow	2.3" to 3.5"	moderate/ slight	rapid	big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, Sandberg bluegrass	convex side slopes hills 30-50	10 to 25	Poor: small stones, slope
	Bilbo, gravelly loam	5,000 to 6,500	slow	2.2" to 3.2"	high/slight	rapid	big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, Sandberg bluegrass	concave, south-facing side slopes hills 30-50	60+	Poor: small stones, slope
	Soughe, very gravelly loam	6,100 to 6,500	moderately slow	1.0" to 1.4"	slight/ slight	medium	big sagebrush, rabbitbrush, Sandberg bluegrass, bluebunch wheatgrass	crests hills 4-15	10 to 15	Poor: depth to rock, small stones

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SOILS IN THE VICINITY OF THE WOODRUFF CREEK EXPLORATION PROJECT AREA

USDA-SCS Map Unit	Soil Series & Surface Texture	Elevation (feet)	Permeability	Available Water Capacity	Erosion Hazard Water/ Wind	Runoff	Dominant Present Vegetation	Landscape position/ % Slope	Approximate Solum Range ² (inches)	Topsoil Rating ¹
574 Sumine- Cleavage- Cleavage, very cobbly Assn.	Sumine, very gravelly loam	5,600 to 7,600	moderate	2.4* to 3.6*	moderate/ slight	rapid	mountain big sagebrush, antelope bitterbrush, bottlebrush squirretail	south-facing concave side slopes mountains 15-50	20 to 30	Poor: small stones, slope
	Cleavage, very gravelly loam	5,600 to 7,600	moderately slow	1.5* to 1.8*	slight/ slight	rapid	low sagebrush, antelope bitterbrush, Sandberg bluegrass	smooth to slightly convex side slopes mountains 15-30	10 to 15	Poor: depth to rock, small stones, slope
	Cleavage, very cobbly loam	5,600 to 7,600	Moderately slow	1.5* to 1.8*	slight/ slight	rapid	black sagebrush, low sagebrush, Sandberg bluegrass	crests and convex side slopes mountains 15-30	10 to 15	Poor: depth to rock, small stones, slope
992 Eboda- Loncan- Leevan Assn.	Eboda, gravelly loam	6,000 to 7,200	moderately slow	4.9* to 6.8*	moderate/ slight	rapid	big sagebrush, Idaho fescue	slightly concave side slopes mountains 15-30	20 to 40	Poor: small stones, slope
	Loncan, very gravelly loam	6,000 to 7,200	moderate	1.6* to 3.1*	moderate/ slight	rapid	mountain big sagebrush, snowberry, Idaho fescue, bluebunch wheatgrass	concave north-facing side slopes mountains 30-50	20 to 30	Poor: small stones, slope
	Leevan, cobbly loam	6,000 to 7,200	slow	2.4* to 3.8*	moderate/ slight	rapid	low sagebrush, Idaho fescue	smooth and convex north and east- facing side slopes 15-30	14 to 24	Poor: small stones, slope

APPENDIX A
SOILS IN THE VICINITY OF THE WOODRUFF CREEK EXPLORATION PROJECT AREA

USDA-SCS Map Unit	Soil Series & Surface Texture	Elevation (feet)	Permeability	Available Water Capacity	Erosion Hazard Water/ Wind	Runoff	Dominant Present Vegetation	Landscape position/ % Slope	Approximate Solum Range ² (inches)	Topsoil Rating ¹
993 Edoba- Quartz- Loncan Assn.	Eboda, gravelly loam	5,900 to 6,300	moderately slow	4.9" to 6.8"	moderate/ slight	rapid	big sagebrush, bluebunch wheatgrass, Idaho fescue	lower smooth north-facing side slopes hills 15-30	33 to 39	Poor: small stones, slope
	Quarz, very gravelly loam	5,900 to 6,800	slow	2.5" to 3.1"	moderate/ slight	rapid	big sagebrush, bluebunch wheatgrass, basin wildrye	south-facing side slopes hills 30-50	20 to 25	Poor: small stones, slope
	Loncan, very gravelly loam	5,900 to 6,800	moderate	1.6" to 3.1"	moderate/ slight	rapid	mountain big sagebrush, Thurber needlegrass, Idaho fescue	concave north-facing side slopes hills 30-50	20 to 30	Poor: depth to rock, slope
1725 Quartz- Cleavage- Loncan Assn.	Quarz, cobbly loam	7,500 to 8,000	slow	2.6" to 3.2"	moderate/ slight	rapid	mountain big sagebrush, antelope bitterbrush, bluebunch wheatgrass	lower convex south-facing side slopes mountains 15-50	20 to 25	Poor: small stones, slope
	Cleavage, extremely gravelly loam	7,500 to 8,000	moderately slow	1.5" to 1.8"	slight/ slight	rapid	black sagebrush, low sagebrush, Sandberg bluegrass	crests and upper convex side slopes mountains 15-50	10 to 15	Poor: depth to rock, small stones, slope
	Loncan, very gravelly loam	6,600 to 8,000	moderate	1.6" to 3.1"	moderate/ slight	rapid	mountain big sagebrush, antelope bitterbrush, sericeberry, Sandberg bluegrass	concave north-facing side slopes mountains 15-50	20 to 30	Poor: small stones, slope

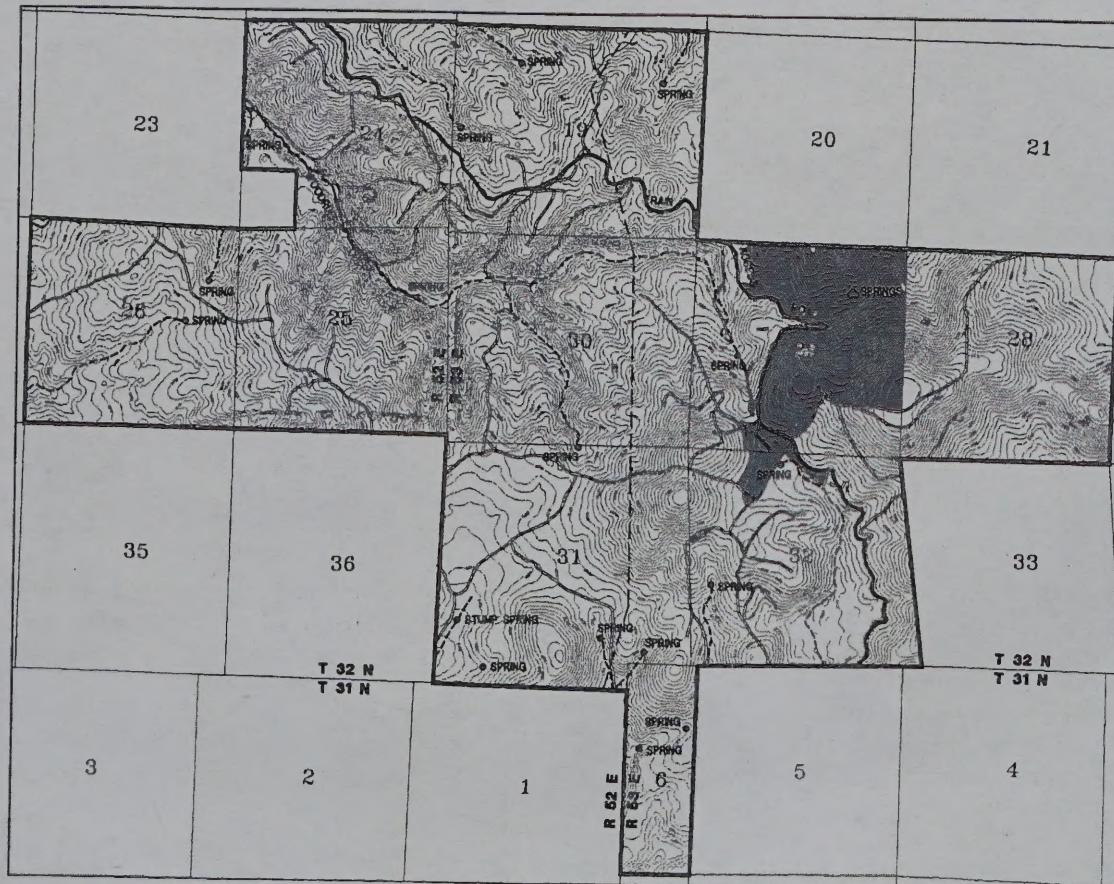
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SOILS IN THE VICINITY OF THE WOODRUFF CREEK EXPLORATION PROJECT AREA

USDA-SCS Map Unit	Soil Series & Surface Texture	Elevation (feet)	Permeability	Available Water Capacity	Erosion Hazard Water/ Wind	Runoff	Dominant Present Vegetation	Landscape position/ % Slope	Approximate Solum Range ² (inches)	Topsoil Rating ¹
1880 Chen- Arcia- Cleavage Assn.	Chen, very cobbly loam	6,000 to 7,000	very slow	0.8* to 1.0*	slight/ slight	rapid	low sagebrush, bluebunch wheatgrass. Thurber needlegrass	convex side slopes of mountains 15-30	10 to 15	Poor: depth to rock, small stones, slope
	Arcia, gravelly loam	6,000 to 7,000	slow	4.2* to 5.9*	high/ slight	rapid	big sagebrush, bluebunch wheatgrass, Idaho fescue	upper concave north-facing side slopes mountains 30-50	34 to 39	Poor: small stones, slope
	Cleavage, extremely gravelly loam	6,000 to 7,000	moderately slow	1.5* to 1.8*	slight/ slight	medium	low sagebrush, bottlebrush squirretail	crests of mountains 4-15	10 to 15	Poor: depth to rock, small stones

Source: *Soil Survey of Tuscarora Mountain Area, Nevada, Parts of Elko, Eureka, and Lander Counties*, USDA Soil Conservation Service, 1980 (USDA-SCS, 1980); and *Elko Central Soil Survey - Draft*, USDA Soil Conservation Service, 1985 (USDA-SCS, 1985).

¹Table 12 - *Construction Materials, Soil Survey of Tuscarora Mountain Area, Nevada, Parts of Elko, Eureka, and Lander Counties*, USDA Soil Conservation Service, (USDA-SCS, 1980) and

²Solum Range consists of the A and B horizons.

**LEGEND**

- EXISTING DIRT ROADS AND DRILL PADS
- EXPLORATION PROJECT BOUNDARY
- - - EXISTING FENCE
- PERENNIAL FLOW
- - - INTERMITTENT FLOW
- SPRING SPRINGS

SCALE: 1" = 3000'

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